## Copyright

This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. Neither this manual, nor any of the material contained herein, may be reproduced without written consent of the author.

Version 1.0

## Disclaimer

The information in this document is subject to change without notice. The manufacturer makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. The manufacturer reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of the manufacturer to notify any person of such revision or changes.

## Trademark Recognition

Microsoft, MS-DOS and Windows are registered trademarks of Microsoft Corp.

AMD, Phenom, Athlon, Sempron and Duron are registered trademarks of AMD Corporation.

Other product names used in this manual are the properties of their respective owners and are acknowledged.

## Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

## Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

## Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

## About the Manual

The manual consists of the following:

**Chapter 1**
**Introducing the Motherboard**
Describes features of the motherboard.
Go to ⇨ page 1

**Chapter 2**
**Installing the Motherboard**
Describes installation of motherboard components.
Go to ⇨ page 9

**Chapter 3**
**Using BIOS**
Provides information on using the BIOS Setup Utility.
Go to ⇨ page 27

**Chapter 4**
**Using the Motherboard Software**
Describes the motherboard software
Go to ⇨ page 49

**Chapter 5**
**Setting Up AMD SB950 RAID Configuration**
Provides information about SATA RAID Setup
Go to ⇨ page 53

**Chapter 6**
**ATI CrossFireX™ Technology Support**
Describes the ATI CrossfireX™ Technology
Go to ⇨ page 61

**Chapter 7**
**Trouble Shooting**
Provides basic troubleshooting tips
Go to ⇨ page 65

# TABLE OF CONTENTS


**Preface** i

## Chapter 1 1

**Introducing the Motherboard** 1

Introduction....1
Feature....2
Motherboard Components....6

## Chapter 2 9

**Installing the Motherboard** 9

Safety Precautions....9
Choosing a Computer Case....9
Installing the Motherboard in a Case....9
Checking Jumper Settings....10
*Setting Jumpers....10*
*Checking Jumper Settings....11*
Installing Hardware....12
*Installing the Processor....12*
*Installing Memory Modules....13*
*Expansion Slots....15*
*Connecting Optional Devices....17*
*Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive....20*
Connecting I/O Devices....22
Connecting Case Components....23
*Front Panel Header....26*

## Chapter 3 27

**Using BIOS** 27

About the Setup Utility.... 27
*The Standard Configuration....27*
*Entering the Setup Utilities....27*
*Resetting the Default CMOS Values....28*
Using BIOS....29
*BIOS Navigation Key....29*
*Main Menu....30*
*Advanced Menu....31*
*Chipset Menu....39*
*M.I.B.X(MB Intelligent Bios X) Menu....40*
*Boot Menu....44*
*Security Menu....45*

*Save & Exit Menu*.....*46*
*Updating the BIOS*.....*47*

**Chapter 4** **49**
**Using the Motherboard Software** **49**
About the Software DVD-ROM/CD-ROM.....49
Auto-installing under Windows XP/Vista/7.....49
*Running Setup*.....*50*
Manual Installation.....52
Utility Software Reference.....52

**Chapter 5** **53**
**Setting Up AMD SB950 RAID Configuration** **53**
Setting Up a Bootable RAID Array.....53

**Chapter 6** **61**
**ATI CrossFireX™ Technology Support** **61**
Requirements.....61
Installing CrossFire™ graphics cards.....61
The Catalyst™ Control Center Dialog Box.....63
*To Enable CrossFireX™*.....*63*

**Chapter 7** **65**
**Trouble Shooting** **65**
Start up problems during assembly.....65
Start up problems after prolong use.....66
Maintenance and care tips.....66
Basic Troubleshooting Flowchart.....67
**POST Code Checkpoints** **69**

# Chapter 1
## *Introducing the Motherboard*

## Introduction

Thank you for choosing the A990FXM-A DELUXE motherboard. This motherboard is a high performance, enhanced function motherboard that supports socket for AMD Phenom™ and later desktop processors (socket AM3+) for high-end business or personal desktop markets.

The motherboard incorporates the AMD 990FX Northbridge (NB) and SB950 Southbridge (SB) chipsets. The Northbridge supports the HyperTransport™ 3.0 interface. The memory controller supports DDR3 memory DIMM frequencies of 2133 (OC)/1866/1600/1333*. It supports four DDR3 slots with maximum memory size of 128 GB*. Three PCI Express x16 slots, intended for Graphics Interface, are fully compliant to the PCI Express Gen2 (version 2.0). In addition, two PCI Express x1 slots are supported.

The SB950 Southbridge supports one PCI slot which is PCI v2.3 compliant. It integrates USB 2.0 interface, supporting up to twelve USB 2.0 ports (eight USB ports and two USB 2.0 headers support additional four USB 2.0 ports) and one USB 3.0 header. The Southbridge integrates a Serial ATA host controller, supporting six SATA ports with maximum transfer rate up to 6 Gb/s each, and two eSATA3 6.0 Gb/s connector at Real connector.

In addition, the mainboard assembles extra USB3.0 chip, which supports two USB 3.0 ports at rear panel with high speed of 5Gb/s.

There is an advanced full set of I/O ports in the rear panel, including one PS/2 mouse and keyboard combo connector, one Bluetooth, two ESATA ports, one CLR_CMOS button, eight USB 2.0 ports, two USB 3.0 ports, two LAN ports, one optical SPDIFO port and audio jacks for microphone, line-in and 8-ch line-out.

** Due to the limitation of AMD CPU spec, please refer to Memory QVL for more information.*

# Feature

## Processor

This motherboard uses a socket AM3+ that carries the following features:

- Accommodates AMD Phenom™ and later desktop processors (socket AM3+)
- Supports HyperTransport™ (HT) 3.0 interface speeds

HyperTransport™ Technology is a point-to-point link between two devices, it enables integrated circuits to exchange information at much higher speeds than currently available interconnect technologies.

## Chipset

The AMD 990FX Northbridge (NB) and SB950 Southbridge (SB) chipsets are based on an innovative and scalable architecture with proven reliability and performance.

***AMD 990FX (NB)***

- One x4 A-Link Express III interface for connection to an AMD Southbridge. The A-Link Express III is a proprietary interface developed by AMD basing on the PCI Express technology, with additional Northbridge-Southbridge messaging functionalities. It supports the PCIe Gen 2 transfer rate of 5 GT/s, and is backward compatible with the A-Link Express II interface.
- Supports three x16 PCI-Express Gen2 graphics link
- Fully supports ACPI states S1, S3, S4 and S5
- Complies with all relevant Windows Logo Program (WLP) requirements from Microsoft® for WHQL certification.
- Supports 16-bit up/down HyperTransport (HT) 3.0 interface up to 5.2 GT/s.

***SB950 (SB)***

- Compliant with PCI 2.3 specification at 33 MHz
- Four-lane PCI Express® (PCIe®) 2.0 interface, supporting up to two general purpose devices. Supported configurations include: § 1x4 § 2x4 § 1x2+2x1 § 4x1
- Supports six Serial ATA devices which speeds up to 6 Gb/s and one IDE ATA133
- Supports two eSATA3 which speeds up to 6.0 Gb/s through the bundled eSATA3 bracket
- Integrated USB 3.0 Host Controller supporting up to two USB 3.0 ports
- Integrated USB 2.0 Host Controller supporting up to twelve USB 2.0 ports
- Supports integrated RAID 0, RAID 1, RAID 5, and RAID 10 functionality across all 6 ports (RAID 10 requires use of 4 or more SATA ports, and RAID 5 requires use of 3 or more SATA ports)

## Memory

- Supports DDR3 2133 (OC)/1866/1600/1333 DDR3 SDRAM with Dual-channel architecture
- Accommodates four unbuffered DIMMs

- Up to 32 GB per DIMM with maximum memory size up to 128 GB

## Audio

- 7.1+2 Channel High Definition Audio Codec
- Meets Microsoft WLP3.x (Windows Logo Program) audio requirements
- All DACs supports 44.1k/48k/96k/192kHz sample rate
- Software selectable 2.5V/3.2V/4.0V VREFOUT
- Direct Sound 3D. compatible
- Power Support: Digital: 3.3V; Analog: 5.0V

## Onboard LAN

- Supports PCI Express™ 2.0
- Integrated 10/100/1000 transceiver
- Wake-on-LAN and remote wake-up support

## Expansion Options

The motherboard comes with the following expansion options:

- Three PCI Express x16 slots for Graphics Interface
- Two PCI Express x1 slots
- One 32-bit PCI v2.3 compliant slot
- Six 7-pin SATA connectors
- One IDE ATA133 connector

## Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- One CLR CMOS button
- Two ESATA port
- One Bluetooth
- One PS/2 keyboard and mouse combo port
- Eight USB 2.0 ports
- Two USB 3.0 blue ports
- Two LAN ports
- One optical SPDIFO port
- Audio jacks for microphone, line-in and 8-ch line-out

## BIOS Firmware

The motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.

*1. Some hardware specifications and software items are subject to change without prior notice.*

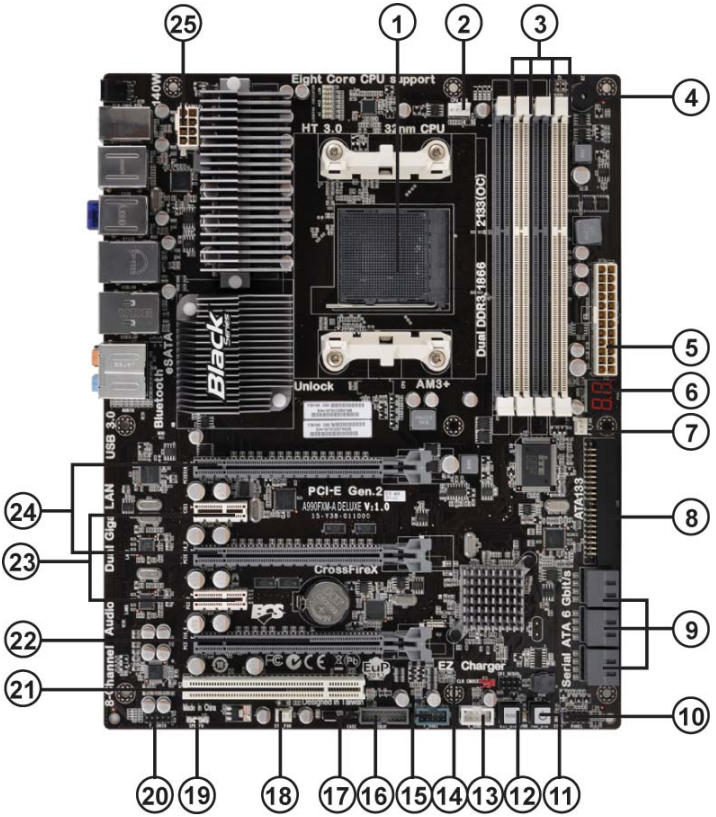
*2. Due to chipset limitation, we recommend that motherboard be operated in the ambiance between 0 and 50°C.*

# Specifications

| | |
|---|---|
| CPU | • AMD Phenom™ and later desktop processors (socket AM3+)<br>• Supports HyperTransport™ (HT) 3.0 interface speeds<br>• 140W TDP |
| Chipset | • NB: AMD 990FX SB: SB950 |
| Memory | • Dual-channel DDR3 memory architecture<br>• 4 x 240-pin DDR3 DIMM sockets support up to 128 GB<br>• Supports DDR3 DDR3 2133 (OC)/1866/1600/1333 SDRAM |
| Expansion Slots | • 3 x PCI Express Gen2 x16 slots<br>• 2 x PCI Express x1 slots (Gen2)<br>• 1 x PCI slot |
| Storage | • Supported by AMD SB950 Express Chipset<br>-6 x Serial ATA 6.0 Gb/s Host Controllers<br>-Supports RAID 0, 1, 5 and 10<br>-1 x IDE ATA133<br>• Supported by Marvell 9128<br>-2 x eSATA 6 Gb/s devices |
| Audio | • ALC892 8-Channel |
| LAN | • Dual Realtek 8111E Giga Lan |
| Rear Panel I/O | • 1 x CLR CMOS button<br>• 2 x eSATA ports<br>• 1 x Bluetooth<br>• 1 x PS/2 keyboard and mouse combo port<br>• 8 x USB 2.0 ports<br>• 2 x USB 3.0 blue ports<br>• 2 x RJ45 LAN ports<br>• 1 x Audio port (Line in, microphone in, line out, and optical SPDIF out) |
| Internal I/O Connectors & Headers | • 1 x 24-pin ATX Power Supply connector<br>• 1 x 8-pin ATX12V connector<br>• 6 x Serial ATA 6Gb/s connectors<br>• 2 x eSATA3 6.0 Gb/s connectors through the bundled eSATA3 bracket<br>• 1 x IDE ATA133 support by Marvell 9128<br>• 2 x USB 2.0 headers support additional 4 USB 2.0 ports<br>• 1 x USB 3.0 header<br>• 1 x Front panel header<br>• 1 x Chassis Intrusion Detect header<br>• 1 x SPDIF out header<br>• 1 x Front panel audio header<br>• 1 x POST Debug LED<br>• 1 x Buzzer<br>• 1 x Reset button<br>• 1 x Power button<br>• 1 x CLR_COMS header<br>• 1 x 4-pin CPU_FAN connector |

| | |
|---|---|
| | • 1 x 3-pin SYS_FAN connector<br>• 1 x 3-pin PWR_FAN connector |
| System BIOS | • AMI BIOS with 32Mb SPI Flash ROM<br>• Supports Plug and Play, STR (S3) / STD (S4) , Hardware monitor, Multi Boot<br>• Supports ACPI & DMI<br>• Audio, LAN, can be disabled in BIOS<br>• F7 hot key for boot up devices option<br>• Supports FSB adjustment, increase in a increase of 1MHz.<br>• Support Over-Clocking<br>• Support Dual Display<br>• Support PgUp clear CMOS Hotkey Has PS2 KB Model only |
| Form Factor | • ATX Size, 305mm x 244mm |

## Motherboard Components




*The above image is for reference only; please take the actual motherboard for detailed parts.*

***Table of Motherboard Components***

| LABEL | COMPONENTS |
|---|---|
| 1. CPU Socket | AMD Phenom™ and later desktop processors (socket AM3+) |
| 2. CPU_FAN | CPU cooling fan connector |
| 3. DDR3_1/2/3/4 | 240-pin DDR3 SDRAM slots |
| 4. BZ | Buzzer |
| 5. ATX_POWER | Standard 24-pin ATX power connector |
| 6. POST | POST Debug LED |
| 7. PWR_FAN | Power cooling fan connector |
| 8. IDE | Primary IDE channel |
| 9. SATA1~6 | Serial ATA 6.0 Gb/s connectors |
| 10. PANEL | Front panel switch/LED header |
| 11. PWR_BTN | Power on button |
| 12. RST_BTN | Reset button |
| 13. F_USB2 | Front panel USB 2.0 header |
| 14. CLR_CMOS | Clear CMOS jumper |
| 15. F_USB1 | Front panel USB 2.0 header（with EZ Charge function） |
| 16. USB3F | Front panel USB 3.0 header |
| 17. CASE | Case open header |
| 18. SYS_FAN | System cooling fan connector |
| 19. SPDIFO | SPDIF out header |
| 20. F_AUDIO | Front panel audio header |
| 21. PCI | 32-bit add-on card slot |
| 22. PCIEX16_S | PCI Express slot for graphics interface |
| 23. PCIE1~2 | PCI Express x1 slots |
| 24. PCIEX16_1~2 | PCI Express slots for graphics interface |
| 25. ATX12V | 8-pin +12V power connector |

This concludes Chapter 1. The next chapter explains how to install the motherboard.

## Memo

# Chapter 2
# *Installing the Motherboard*

## Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

## Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the ATX system case. Some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Make sure that your case has sufficient power and space for all drives that you intend to install.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

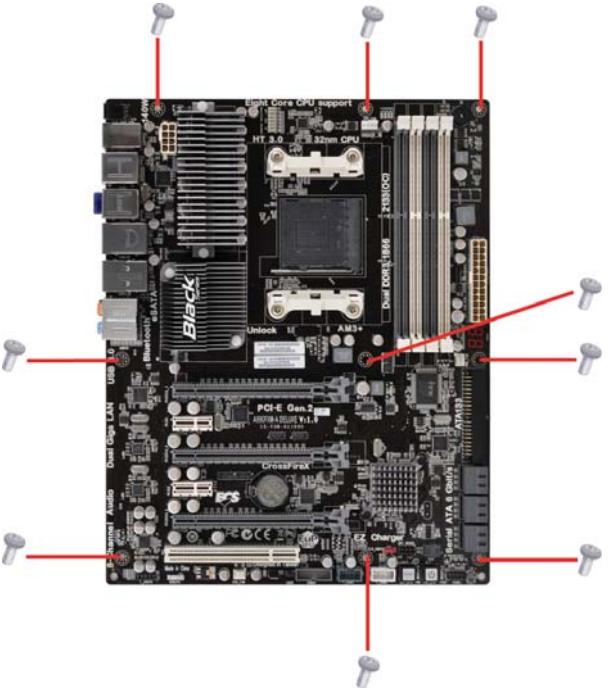
This motherboard carries an ATX form factor of 305 X 244 mm. Choose a case that accommodates this form factor.

## Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



*Do not over-tighten the screws as this can stress the motherboard.*

## Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

### *Setting Jumpers*

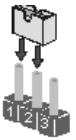
Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

**SHORT**

**OPEN**

This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT.



### *Checking Jumper Settings*

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.

| Name | Type | Description | Setting (default) | |
|---|---|---|---|---|
| **CLR_CMOS** | 3-pin | Clear CMOS | 1-2: NORMAL<br>2-3: CLEAR<br>Before clearing the CMOS, make sure to turn off the system. | <br>1 2 3<br>**CLR_CMOS** |

*To avoid the system unstability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Default Settings" and then "Save Changes and Exit".*

# Installing Hardware

## *Installing the Processor*

*Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.*

*On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.*

*Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.*

## Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the motherboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.

*Warning:*

*1. Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.*

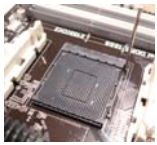
*2. Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.*

This motherboard has a socket AM3+ processor socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

## CPU Installation Procedure

The following illustration shows CPU installation components.

1 Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.
2 Locate the CPU cut edge (the corner with the pin hold noticeably missing). Align and insert the CPU correctly.
3 Press the lever down and apply thermal grease on top of the CPU.
4 Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.
5 Flip the levers over to lock the heat sink in place and connect the CPU cooling Fan power cable to the CPU FAN connector. This completes the installation.



* *For reference only*

*To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 4800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.*

## *Installing Memory Modules*

This motherboard accommodates four memory modules. It can support four 240-pin DDR3 2133 (OC)/1866/1600/1333*. The total memory capacity is 128 GB*.

### DDR3 SDRAM memory module table

| Memory module | Memory Bus |
|---|---|
| *DDR3 1333* | *667 MHz* |
| *DDR3 1600* | *800 MHz* |
| *DDR3 1866* | *933 MHz* |
| *DDR3 2133* | *1067 MHz* |

You must install at least one module in any of the four slots. Each module can be installed with 32 GB of memory.

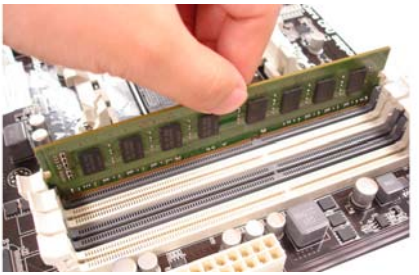
*Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.*

* *Due to the limitation of AMD CPU spec, please refer to Memory QVL for more information.*

## Installation Procedure

Refer to the following to install the memory modules.

1 This motherboard supports unbuffered DDR3 SDRAM only.
2 Push the latches on each side of the DIMM slot down.
3 Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
4 Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
5 Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
6 Install any remaining DIMM modules.



** For reference only*

*For best performance and compatibility, we recommend AMD AM3+ CPU with the RAM Module sequence as below.*

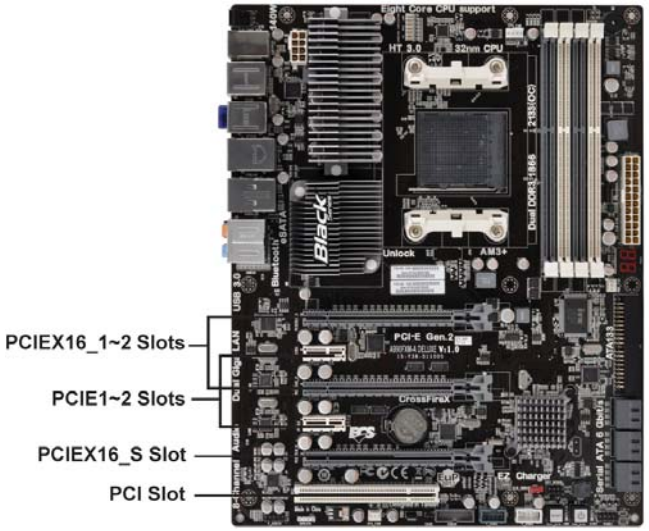
### Recommend memory configuration

| Mode | Sockets | | | |
|---|---|---|---|---|
| | DDR3_1 | DDR3_2 | DDR3_3 | DDR3_4 |
| 1 DIMM | -- | Populated | -- | -- |
| | -- | -- | -- | Populated |
| 2 DIMMs | Populated | Populated | -- | -- |
| | -- | Populated | Populated | -- |
| | -- | -- | Populated | Populated |
| | -- | Populated | -- | Populated |
| | Populated | -- | -- | Populated |
| 3 DIMMs | Populated | Populated | -- | Populated |
| | -- | Populated | Populated | Populated |
| 4 DIMMs | Populated | Populated | Populated | Populated |

## *Expansion Slots*

### Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.




**PCIEX16_1~2 Slots** The PCI Express x16 slots are used to install external PCI Express graphics cards that are fully compliant to the PCI Express Gen2 (version 2.0).

**PCIE1~2 Slots** The PCI Express x1 slots are fully compliant to the PCI Express Gen2 (version 2.0).

**PCIEX16_S Slot** The PCI Express x16_S slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Gen2 (version 2.0).

**PCI Slot** This motherboard is equipped with one standard PCI slot. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slot on this board is PCI v2.3 compliant.

*Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.*

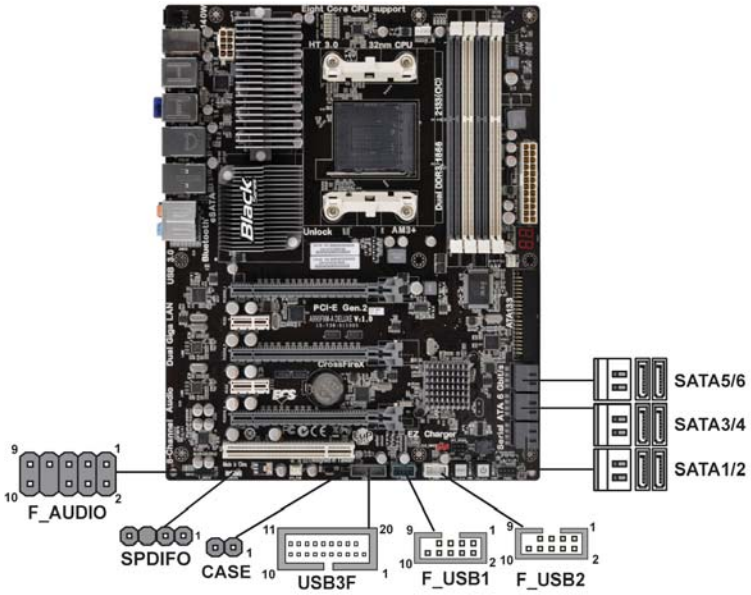
Follow these instructions to install an add-on card:

1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
3 Secure the metal bracket of the card to the system case with a screw.

** For reference only*

## *Connecting Optional Devices*

Refer to the following for information on connecting the motherboard's optional devices:




### SATA1~6: Serial ATA connectors

These connectors are used to support the new Serial ATA devices for the highest data transfer rates (6.0 Gb/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Ground | 2 | TX+ |
| 3 | TX- | 4 | Ground |
| 5 | RX- | 6 | RX+ |
| 7 | Ground | - | - |

### SPDIFO: SPDIF out header

This is an optional header that provides an S/PDIF (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

| Pin | Signal Name | Function |
|---|---|---|
| 1 | SPDIF | SPDIF digital output |
| 2 | +5VA | 5V analog Power |
| 3 | Key | No pin |
| 4 | GND | Ground |

## F_USB1~2: Front Panel USB 2.0 headers

The motherboard has six USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.

Unlike F_USB2 in this mainboard, F_USB1 supports EZ Charger technology (optional), provides 3 times current than general USB port in off mode for USB devices. It is useful and excellent, especially for the iPhone, iPad and iPod touch devices that need a large amount of current for faster recharging within less time.

| Pin | Signal Name | Function |
|---|---|---|
| 1 | USBPWR | Front Panel USB Power |
| 2 | USBPWR | Front Panel USB Power |
| 3 | USB_FP_P0- | USB Port 0 Negative Signal |
| 4 | USB_FP_P1- | USB Port 1 Negative Signal |
| 5 | USB_FP_P0+ | USB Port 0 Positive Signal |
| 6 | USB_FP_P1+ | USB Port 1 Positive Signal |
| 7 | GND | Ground |
| 8 | GND | Ground |
| 9 | Key | No pin |
| 10 | USB_FP_OC0 | Overcurrent signal |

*Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.*

## F_AUDIO: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | PORT 1L | 2 | AUD_GND |
| 3 | PORT 1R | 4 | PRESENCE# |
| 5 | PORT 2R | 6 | SENSE1_RETURN |
| 7 | SENSE_SEND | 8 | KEY |
| 9 | PORT 2L | 10 | SENSE2_RETURN |

## CASE: Chassis Intrusion Detect Header

This detects if the chassis cover has been removed. This function needs a chassis equipped with instrusion detection switch and needs to be enabled in BIOS.

| Pin 1-2 | Function |
|---|---|
| Short | Chassis cover is removed |
| Open | Chassis cover is closed |

### USB3F: Front Panel USB 3.0 header

This Motherboard implements one USB 3.0 header supporting 2 extra front USB 3.0 ports, which delivers 5Gb/s transfer rate.

| Pin | Signal Name | Function |
|---|---|---|
| 1 | Vbus | Front Panel USB Power |
| 2 | IntA_P1_SSRX- | USB3 ICC Port1 SuperSpeed Rx- |
| 3 | IntA_P2_SSRX+ | USB3 ICC Port1 SuperSpeed Rx+ |
| 4 | GND | GND |
| 5 | IntA_P1_SSTX- | USB3 ICC Port1 SuperSpeed Tx- |
| 6 | IntA_P1_SSTX+ | USB3 ICC Port1 SuperSpeed Tx+ |
| 7 | GND | GND |
| 8 | IntA_P1_D- | USB3 ICC Port1 D- |
| 9 | IntA_P1_D+ | USB3 ICC Port1 D+ |
| 10 | ID USBOC- | Over Current Protection |
| 11 | IntA_P2_D+ | USB3 ICC Port2 D+ |
| 12 | IntA_P2_D- | USB3 ICC Port2 D- |
| 13 | GND | GND |
| 14 | IntA_P2_SSTX+ | USB3 ICC Port2 SuperSpeed Tx+ |
| 15 | IntA_P2_SSTX- | USB3 ICC Port2 SuperSpeed Tx- |
| 16 | GND | GND |
| 17 | IntA_P2_SSRX+ | USB3 ICC Port2 SuperSpeed Rx+ |
| 18 | IntA_P2_SSRX- | USB3 ICC Port2 SuperSpeed Rx- |
| 19 | Vbus | Front Panel USB Power |

*Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.*

## *Installing a Hard Disk Drive/CD-ROM/SATA Hard Drive*

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

### About IDE Devices

Your motherboard has one IDE interface. An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.

*You must orient the cable connector so that the pin1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.*

#### IDE: IDE Connector

This motherboard supports six high data transfer SATA ports with each runs up to 3.0 Gb/s. To get better system performance, we recommend users connect the CD-ROM to the IDE channel, and set up the hard drives on the SATA ports.

IDE devices enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. Installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

### About SATA Connectors

Your motherboard features six SATA connectors supporting a total of six drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

### Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with an SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

**SATA cable (optional)**

**SATA power cable (optional)**

Refer to the illustration below for proper installation:

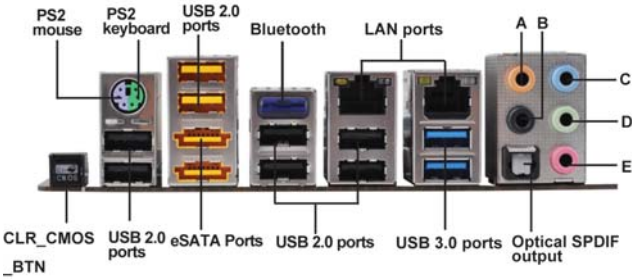
1 Attach either cable end to the connector on the motherboard.
2 Attach the other cable end to the SATA hard drive.
3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.

** For reference only*

*This motherboard supports the "Hot-Plug" function.*

## Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:




**Bluetooth** Used to connect to Bluetooth devices.

**PS/2 mouse and keyboard combo connector** Connect the PS/2 Keyboard or PS/2 Mouse to the PS/2 combo port.

**CLR_COMS_BTN** Use the CLR_CMOS button to clear CMOS.

**USB 2.0 Ports** Use the USB 2.0 ports to connect USB 2.0 devices.

**USB 3.0 Ports** Use the USB 3.0 ports to connect USB3.0 devices.

**LAN Ports** Connect an RJ-45 jack to the LAN port to connect your computer to the network.

**eSATA Ports** Use these ports to connect to external SATA boxes or Serial ATA port multipliers.

*Before connecting the eSATA cables, make sure to turn off the power of the external enclosure.*

**Optical SPDIF Output** This jack connects to external optical digital audio output devices.

**Audio Ports** Use the audio jacks to connect audio devices. The C port is for stereo line-in signal, while the E port is for microphone in signal. This motherboard supports audio devices that correspond to the A, B and D port respectively. In addition, all of the 3 ports, B, and D provide users with both right & left channels individually. Users please refer to the following note for specific port function definition.

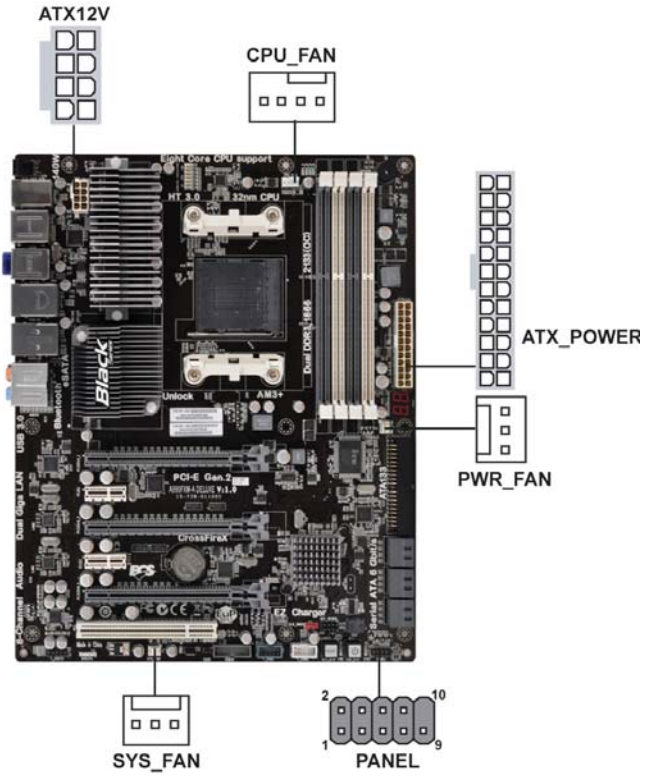
| | |
|---|---|
| A: Center & Woofer | D: Front Out |
| B: Back Surround | E: Mic_in Rear |
| C: Line-in | - |

*The above port definition can be changed to audio input or audio output by changing the driver utility setting.*

## Connecting Case Components

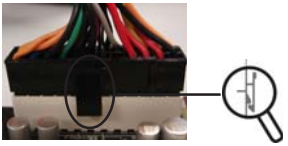
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

1 Connect the CPU cooling fan cable to **CPU_FAN**.
2 Connect the standard power supply connector to **ATX_POWER**.
3 Connect the case switches and indicator LEDs to the **PANEL**.
4 Connect the system cooling fan connector to **SYS_FAN**.
5 Connect the auxiliary case power supply connector to **ATX12V**.
6 Connect the power cooling fan connector to **PWR_FAN**.




### *Connecting 24-pin power cable*

Users please note that the 24-pin power cable can be connected to the ATX_POWER connector.



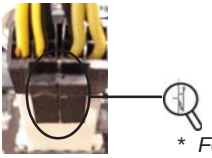
***24-pin power cable***

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX_POWER match perfectly.

** For reference only*

### *Connecting 8/4-pin power cable*

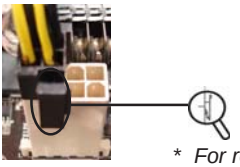
Users please note that the 8-pin and 4-pin power cables can both be connected to the ATX12V connector.



When installing 8-pin power cable, the latches of power cable and the ATX12V connector match perfectly.

** For reference only*

***8-pin power cable***



When installing 4-pin power cable, the latch falls on the left side of the ATX12V connector.

** For reference only*

***4-pin power cable***

## CPU_FAN: Cooling FAN Power Connector

| Pin | Signal Name | Function |
|---|---|---|
| 1 | GND | System Ground |
| 2 | +12V | Power +12V |
| 3 | Sense | Sensor |
| 4 | PWM | CPU FAN control |

*Users please note that the fan connector supports the CPU cooling fan of 1.1A~2.2A (26.4W max.) at +12V.*

## ATX_POWER: ATX 24-pin Power Connector

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | +3.3V | 13 | +3.3V |
| 2 | +3.3V | 14 | -12V |
| 3 | Ground | 15 | COM |
| 4 | +5V | 16 | PS_ON |
| 5 | Ground | 17 | COM |
| 6 | +5V | 18 | COM |
| 7 | Ground | 19 | COM |
| 8 | PWRGD | 20 | -5V |
| 9 | +5VSB | 21 | +5V |
| 10 | +12V | 22 | +5V |
| 11 | +12V | 23 | +5V |
| 12 | +3.3V | 24 | COM |

### SYS_FAN: FAN Power Connector

| Pin | Signal Name | Function |
|---|---|---|
| 1 | GND | System Ground |
| 2 | +12V | Power +12V |
| 3 | Sense | Sensor |

### PWR_FAN: FAN Power Connector

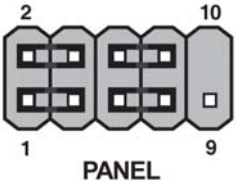
| Pin | Signal Name | Function |
|---|---|---|
| 1 | GND | System Ground |
| 2 | +12V | Power +12V |
| 3 | Sense | Sensor |

### ATX12V: ATX 12V Power Connector

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Ground | 5 | +12V |
| 2 | Ground | 6 | +12V |
| 3 | Ground | 7 | +12V |
| 4 | Ground | 8 | +12V |

## *Front Panel Header*

The front panel header (F_PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:




| Pin | Signal | Function | Pin | Signal | Function |
|---|---|---|---|---|---|
| 1 | HD_LED_P | Hard disk LED (+) | 2 | FP PWR/SLP | *MSG LED (+) |
| 3 | HD_LED_N | Hard disk LED (-) | 4 | FP PWR/SLP | *MSG LED (-) |
| 5 | RST_SW_N | Reset Switch (-) | 6 | PWR_SW_P | Power Switch (+) |
| 7 | RST_SW_P | Reset Switch (+) | 8 | PWR_SW_N | Power Switch (-) |
| 9 | RSVD | Reserved | 10 | Key | No pin |

** MSG LED (dual color or single color)*

### *Hard Drive Activity LED*

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

### *Power/Sleep/Message waiting LED*

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

### *Reset Switch*

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

### *Power Switch*

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

This concludes Chapter 2. The next chapter covers the BIOS.

# Chapter 3
# *Using BIOS*

## About the Setup Utility

The computer uses the latest "American Megatrends Inc. " BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

### *The Standard Configuration*

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

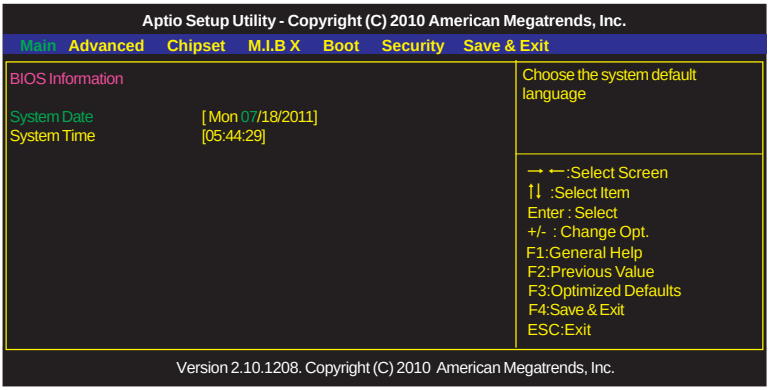
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

### *Entering the Setup Utility*

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

***Press DEL to enter SETUP***

Press the delete key to access the BIOS Setup Utility.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
BIOS Information
System Date [ Mon 07/18/2011]
System Time [05:44:29]
Choose the system default language
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

## *Resetting the Default CMOS Values*

When powering on for the first time, the POST screen may show a "CMOS Settings Wrong" message. This standard message will appear following a clear CMOS data at factory by the manufacturer. You simply need to Load Default Settings to reset the default CMOS values.

Note: Changes to system hardware such as different CPU, memories, etc. may also trigger this message.

American Megatrends
A990FXM-A DELUXE Release 07/28/2011
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.
Press <F7> to enter BBS POPUP
Press <DEL> or <F2> to enter setup.
CMOS Settings Wrong

# Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.

*The default BIOS setting for this motherboard applies for most conditions with optimum performance. It is not suggested to change the default values in the BIOS setup and the manufacture takes no responsibility to any damage caused by changing the BIOS settings.*

## *BIOS Navigation Keys*

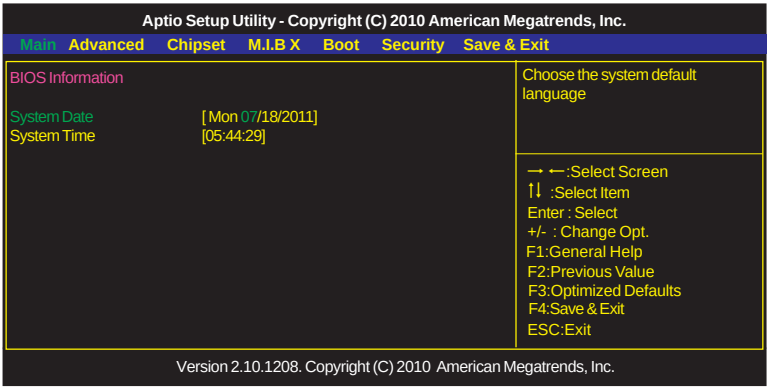
The BIOS navigation keys are listed below:

| KEY | FUNCTION |
|---|---|
| **ESC** | Exits the current menu |
| ↑↓ | Select Screen |
| →← | Select Item |
| **+/-** | Change opt. |
| **Enter** | Select |
| **F1** | General Help |
| **F2** | Previous Value |
| **F3** | Optimized Defaults |
| **F4** | Save & Exit |

*For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS. Please visit the manufacture's website for updated manual.*

## *Main Menu*

When you enter the BIOS Setup program, the main menu appears, giving you an overview of the basic system information. Select an item and press <Enter> to display the submenu.

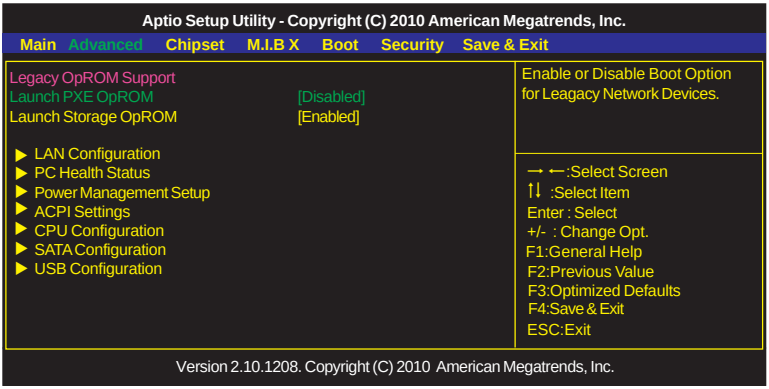

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
BIOS Information
System Date [ Mon 07/18/2011]
System Time [05:44:29]
Choose the system default language
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

## *Advanced Menu*

The Advanced menu items allow you to change the settings for the CPU and other system.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
Legacy OpROM Support
Launch PXE OpROM [Disabled]
Launch Storage OpROM [Enabled]
▶ LAN Configuration
▶ PC Health Status
▶ Power Management Setup
▶ ACPI Settings
▶ CPU Configuration
▶ SATA Configuration
▶ USB Configuration
Enable or Disable Boot Option for Leagacy Network Devices.
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### Launch PXE OpROM (Disabled)

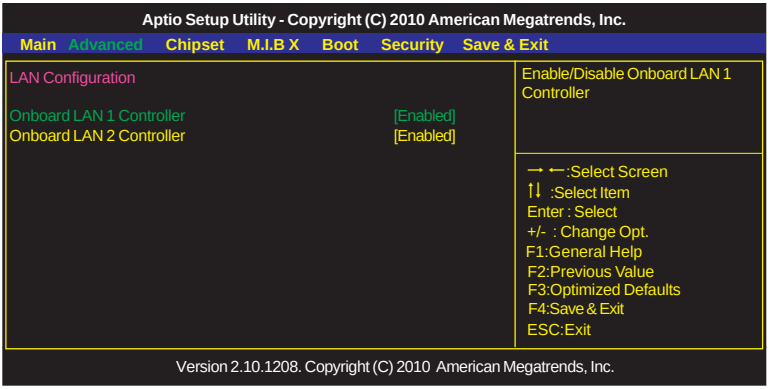
Use this item to enable or disable the PXE OpROM.

### Launch Storage OpROM (Enabled)

Use this item to enable or disable the Storage OpROM.

## ▶ LAN Configuration

The item in the menu shows the LAN-related information that the BIOS automatically detects.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
LAN Configuration
Onboard LAN 1 Controller [Enabled]
Onboard LAN 2 Controller [Enabled]
Enable/Disable Onboard LAN 1 Controller
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

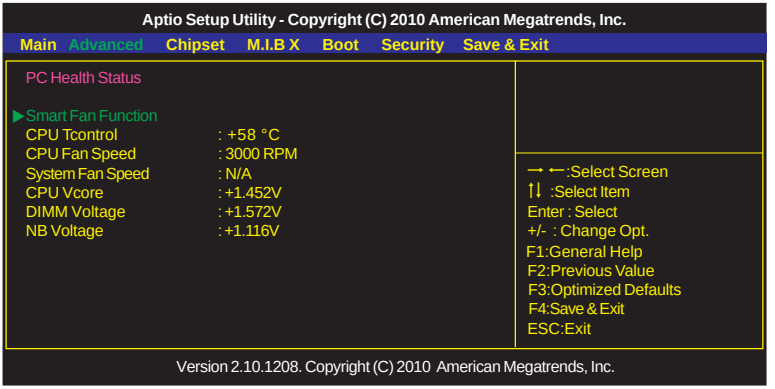
### Onboard LAN1/2 Controller (Enabled)

Use this item to enable or disable the Onboard LAN.

Press <Esc> to return to the Advanced Menu page.

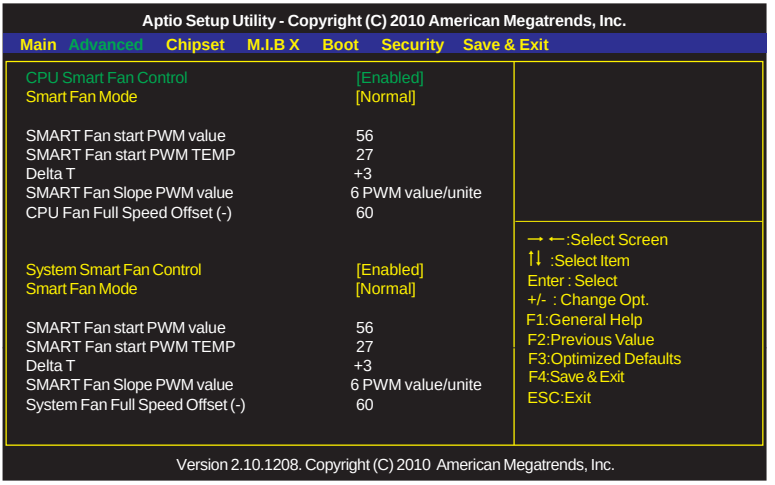
## ► PC Health Status

On motherboards support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
PC Health Status
▶Smart Fan Function
CPU Tcontrol : +58 °C
CPU Fan Speed : 3000 RPM
System Fan Speed : N/A
CPU Vcore : +1.452V
DIMM Voltage : +1.572V
NB Voltage : +1.116V
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### ►Smart Fan Function

Scroll to this item and press <Enter> to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
CPU Smart Fan Control [Enabled]
Smart Fan Mode [Normal]
SMART Fan start PWM value 56
SMART Fan start PWM TEMP 27
Delta T +3
SMART Fan Slope PWM value 6 PWM value/unite
CPU Fan Full Speed Offset (-) 60
System Smart Fan Control [Enabled]
Smart Fan Mode [Normal]
SMART Fan start PWM value 56
SMART Fan start PWM TEMP 27
Delta T +3
SMART Fan Slope PWM value 6 PWM value/unite
System Fan Full Speed Offset (-) 60
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

***CPU/System Smart FAN Control (Enabled)***

This item allows you to enable/disable the control of the CPU/system fan speed by chang-ing the fan voltage.

***Smart Fan Mode (Normal)***

This item allows you to select the fan mode (Normal, Quiet, Silent, or Manual) for a better operation environment. If you choose Normal mode, the fan speed will be auto adjusted depending on the CPU temperature. If you choose Quite mode, the fan speed will be auto minimized for quiet environment. If you choose Silent mode, the fan speed will be auto restricted to make system more quietly. If you choose Manual mode, the fan speed will be adjust depending on users' parameters.

***SMART Fan start PWM value (56)***

This item is used to set the start PWM value of the smart fan.

***SMART Fan start TEMP (27)***

This item is used to set the start temperature of the smart fan.

***DeltaT (+3)***

This item specifies the range that controls CPU temperature and keeps it from going so high or so low when smart fan works.

***SMART Fan Slope PWM value (6 PWM value/unite)***

This item is used to set the Slope Select PWM of the smart fan.

***CPU/System Fan Full Speed Offset(-) (60)***

This item is used to set the CPU/system fan full speed offset value.

Press <Esc> to return to the PC Health Status page.

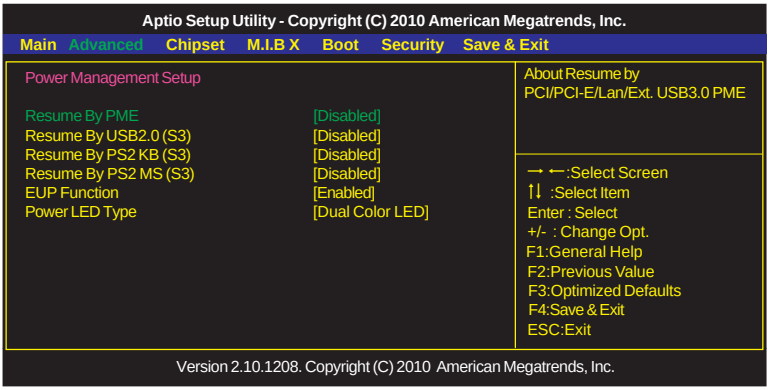
**System Component Characteristics**

These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,... etc.

- CPU Tcontrol
- CPU FAN Speed
- System FAN Speed
- CPU Vcore
- DIMM Voltage
- NB Voltage

## ▶ Power Management Setup

This page sets up some parameters for system power management operation.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
Power Management Setup
Resume By PME [Disabled]
Resume By USB2.0 (S3) [Disabled]
Resume By PS2 KB (S3) [Disabled]
Resume By PS2 MS (S3) [Disabled]
EUP Function [Enabled]
Power LED Type [Dual Color LED]
About Resume by PCI/PCI-E/Lan/Ext. USB3.0 PME
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### Resume By PME (Disabled)

These items specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.

### Resume By USB2.0 (S3) (Disabled)

This item allows you to enable/disable the USB2.0 device wakeup function from S3 mode.

### Resume By PS2 KB (S3) (Disabled)

This item enables or disables you to allow PS2 keyboard activity to awaken the system from power saving mode.

### Resume By PS2 MS (S3) (Disabled)

This item enables or disables you to allow PS2 mouse activity to awaken the system from power saving mode.

### EUP Support (Enabled)

This item allows user to enable or disable EUP support.

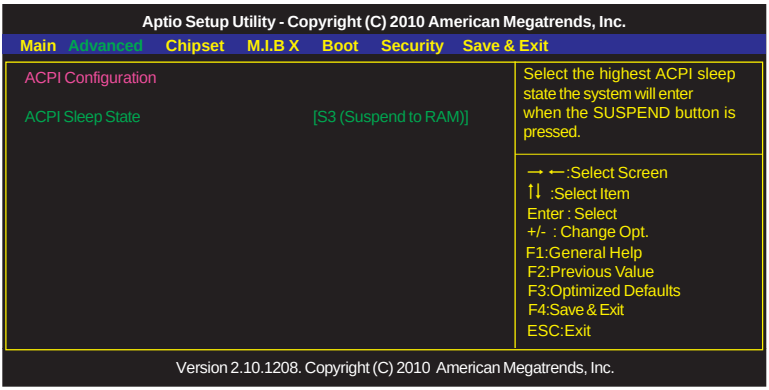
### Power LED Type (Dual Color LED)

This item enables you to set Power LED type.

Press <Esc> to return to the Advanced Menu page.

## ▶ACPI Configuration

The item in the menu shows the highest ACPI sleep state when the system enters suspend.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
ACPI Configuration
ACPI Sleep State
[S3 (Suspend to RAM)]
Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

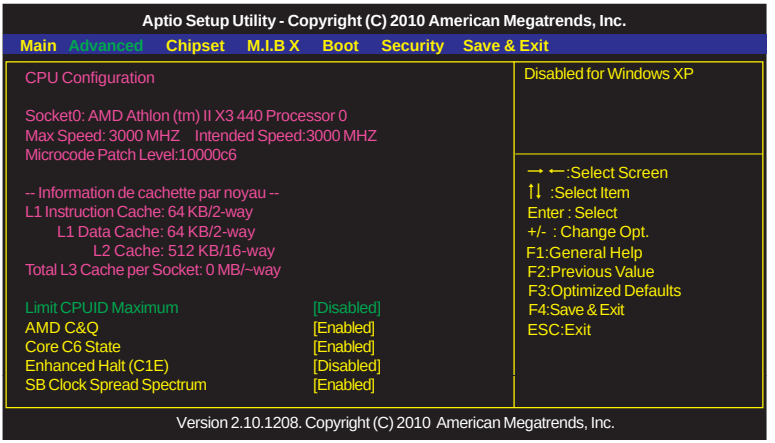
**ACPI Sleep State (S3(Suspend to RAM))**

This item allows user to enter the ACPI S3 (Suspend to RAM) Sleep State(default).

Press <Esc> to return to the Advanced Menu page.

## ▶CPU Configuration

Scroll to this item and press <Enter> to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
CPU Configuration
Socket0: AMD Athlon (tm) II X3 440 Processor 0
Max Speed: 3000 MHZ Intended Speed:3000 MHZ
Microcode Patch Level:10000c6
-- Information de cachette par noyau --
L1 Instruction Cache: 64 KB/2-way
L1 Data Cache: 64 KB/2-way
L2 Cache: 512 KB/16-way
Total L3 Cache per Socket: 0 MB/~way
Limit CPUID Maximum [Disabled]
AMD C&Q [Enabled]
Core C6 State [Enabled]
Enhanced Halt (C1E) [Disabled]
SB Clock Spread Spectrum [Enabled]
Disabled for Windows XP
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### Limit CPUID Maximum (Disabled)

Use this item to enable or disable the maximum CPUID value limit. Set this item to Disabled for Windows XP operation system; set this to Enabled for legacy operating system such as Windows N4.0.

### AMD C&Q (Enabled)

This item helps the system to lower the frequency when CPU idles. When the frequency decreases, the temperature will drop automatically as well.

### Enhanced Halt (C1E) (Disabled)

This item enables or disables enhanced halt.

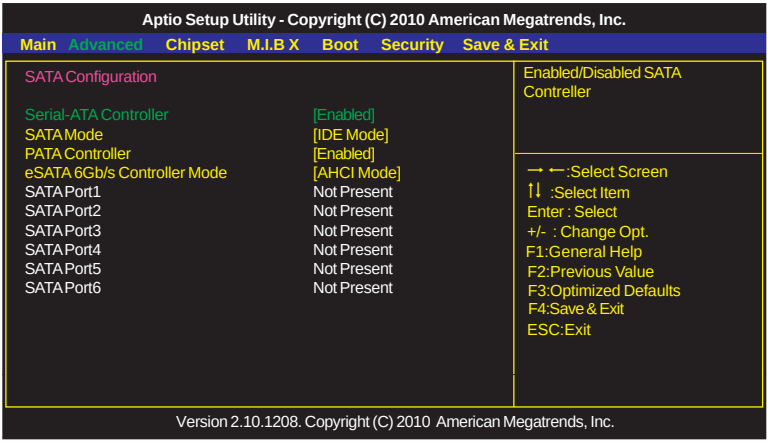
### SB Clock Spread Spectrum (Enabled)

This item is used to enable or disable the Southbridge clock spread spectrum.

Press <Esc> to return to the Advanced Menu page.

## ▶SATA Configuration

Use this item to show the mode of serial-ATA configuration options.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
SATA Configuration
Serial-ATA Controller [Enabled]
SATA Mode [IDE Mode]
PATA Controller [Enabled]
eSATA 6Gb/s Controller Mode [AHCI Mode]
SATA Port1 Not Present
SATA Port2 Not Present
SATA Port3 Not Present
SATA Port4 Not Present
SATA Port5 Not Present
SATA Port6 Not Present
Enabled/Disabled SATA Contreller
→←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### Serial-ATA Controller (Enabled)

This item allows you to enable or disable the onboard SATA controller.

### SATA Mode (IDE Mode)

Use this item to select SATA mode.

### PATA Controller (Enabled)

Use this item to enable or disable the PATA device.

### eSATA 6Gb/s Controller Mode (AHCI Mode)

Use this item to select eSATA mode.

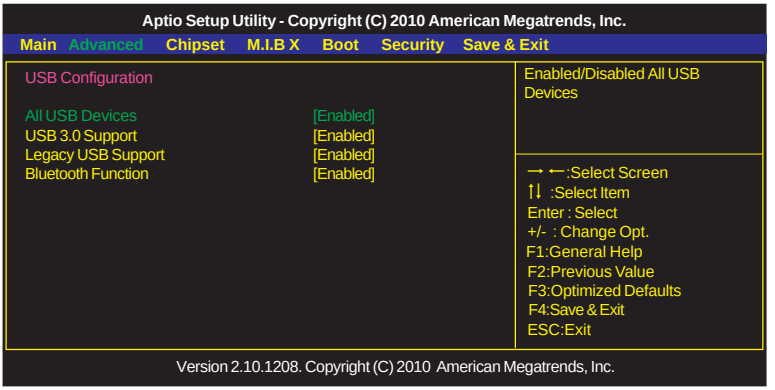
### SATA Port 1~6 (Not Present)

This motherboard supports six SATA channel and each channel allows one SATA device to be installed. Use these items to configure each device on the SATA channel.

Press <Esc> to return to the Advanced Menu page.

## ►USB Configuration

Scroll to this item and press <Enter> to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
USB Configuration
All USB Devices [Enabled]
USB 3.0 Support [Enabled]
Legacy USB Support [Enabled]
Bluetooth Function [Enabled]
Enabled/Disabled All USB Devices
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### All USB Devices (Enabled)

Use this item to enable or disable all USB devices.

### USB 3.0 Support (Enabled)

Use this item to enable or disable USB 3.0 controller. We recommand users keep the default value. Disabling it might cause the USB devices not to work properly.

### Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices. Setting to Audio allows the system to detect the presence of the USB device at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

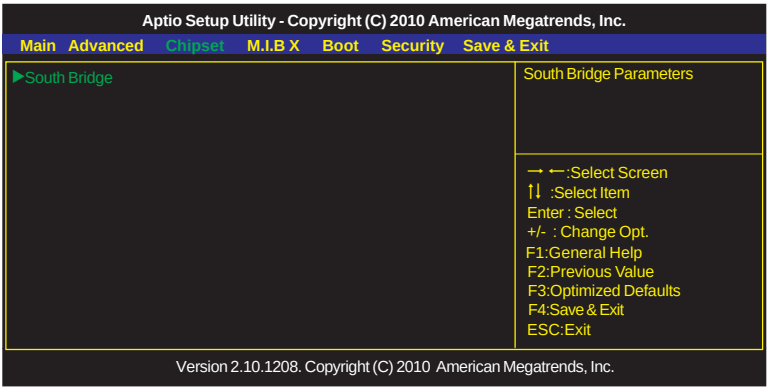
### Bluetooth Function (Enabled)

Use this item to enable or disable bluetooth function.

Press <Esc> to return to the Advanced Menu page.

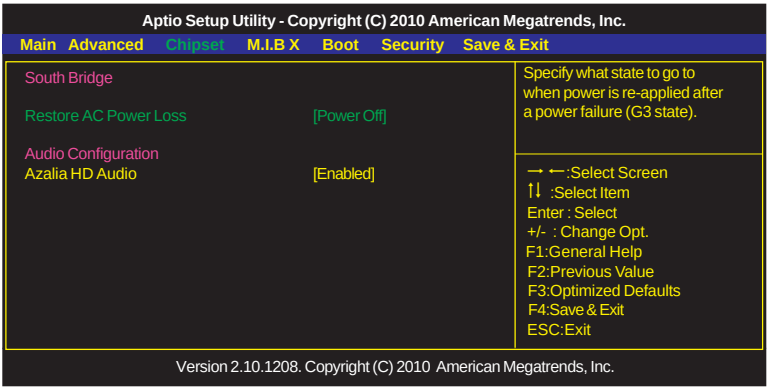
## *Chipset Menu*

The chipset menu items allow you to change the settings for the South Bridge chipset and other system.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
▶South Bridge
South Bridge Parameters
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### ▶South Bridge

Scroll to this item and press <Enter> and view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
South Bridge
Restore AC Power Loss [Power Off]
Audio Configuration
Azalia HD Audio [Enabled]
Specify what state to go to when power is re-applied after a power failure (G3 state).
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### Restore AC Power Loss (Power Off)

This item enables your computer to automatically restart or return to its operating status.

### Audio Configuration

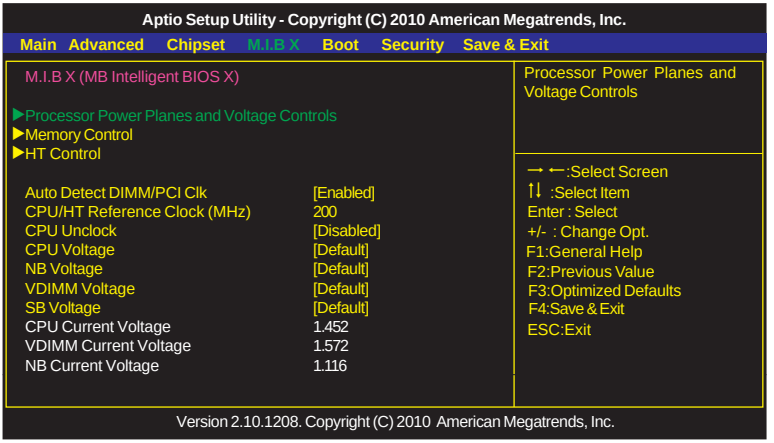
This item shows the information of the audio configuration.

### Azalia HD Audio (Enabled)

This item enables or disables Azalia HD audio.

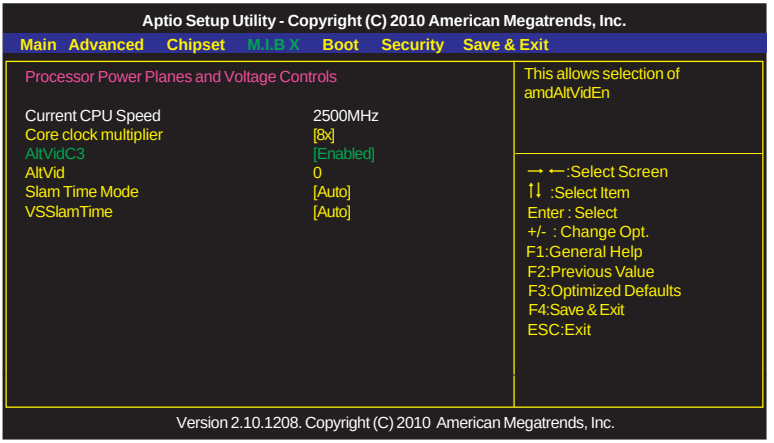
## *M.I.B X(MB Intelligent BIOS X)*

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
M.I.B X (MB Intelligent BIOS X)
▶Processor Power Planes and Voltage Controls
▶Memory Control
▶HT Control
Auto Detect DIMM/PCI Clk [Enabled]
CPU/HT Reference Clock (MHz) 200
CPU Unclock [Disabled]
CPU Voltage [Default]
NB Voltage [Default]
VDIMM Voltage [Default]
SB Voltage [Default]
CPU Current Voltage 1.452
VDIMM Current Voltage 1.572
NB Current Voltage 1.116
Processor Power Planes and Voltage Controls
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### ▶Processor Power Planes and Voltage Controls

Scroll to this item and press <Enter> to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
Processor Power Planes and Voltage Controls
Current CPU Speed 2500MHz
Core clock multiplier [8x]
AltVidC3 [Enabled]
AltVid 0
Slam Time Mode [Auto]
VSSlamTime [Auto]
This allows selection of amdAltVidEn
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### Current CPU Speed (2500 MHz)

This item shows current CPU speed.

### Core clock multiplier (8x)

Use this item to set the core clock multiplier.

### AltVidC3 (Enabled)

This item allows users to select amdAltVidEn 0:24N:3x80[12].

### AltVid (0)

This item specifies the VID driven to the VDD power plane(s) while in the low power state 0:24N:3xDC[6:0].

### Slam Time Mode (Auto)

This item enables you to set slam time mode, this option is only for RB-C3, BL-C3, DA-C3.

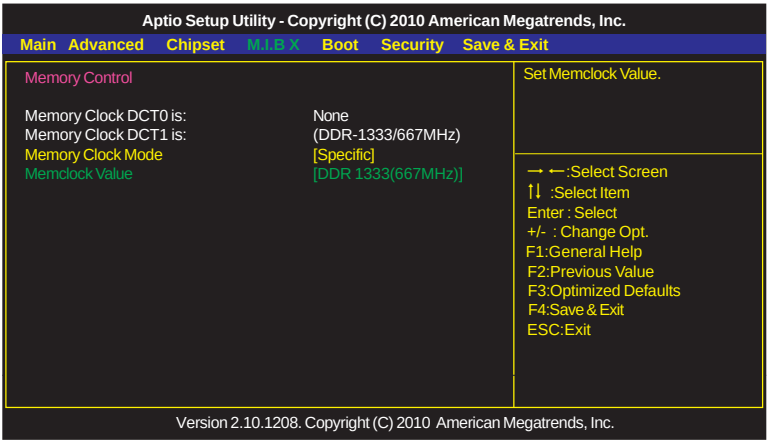
### VSSlamTime (Auto)

This item specifies the time to wait for voltage stabilization during altvid transitions if a new VID is provided to the voltage regulator without ramping. 0:24N:3xDC [31:29]

Press <Esc> to return to the M.I.B X Menu page.

### ▶ Memory Control

Scroll to this item and press <Enter> to view the following screen:




### Memory Clock DCT0 is (None)

This item shows current memory clock of DCT0.

### Memory Clock DCT1 is (DDR-1333/667MHz)

This item shows current memory clock of DCT1.

### Memory Clock Mode (Specific)

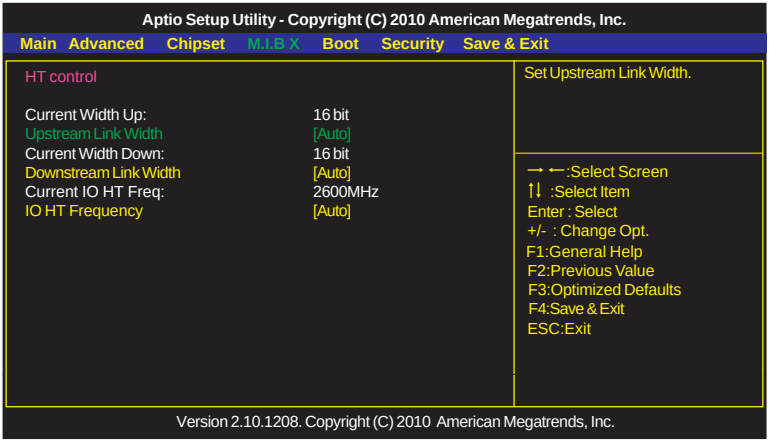
This item allows user to set the memory clock mode.

### Memclock Value (DDR 1333(667MHz))

This item allows user to set the memclock value.

### ►HT Control

Scroll to this item and press <Enter> to view the following screen:


Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
HT control
Current Width Up: 16 bit
Upstream Link Width [Auto]
Current Width Down: 16 bit
Downstream Link Width [Auto]
Current IO HT Freq: 2600MHz
IO HT Frequency [Auto]
Set Upstream Link Width.
→ ←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

**Current Width Up (16 bit)**

This item shows the current Upstream Link Width.

**Upstream Link Width (Auto)**

This item allows you to set Upstream Link Width.

**Current Width Down (16 bit)**

This item shows the current Downstream Link Width.

**Downstream Link Width (Auto)**

This item allows you to set Downstream Link Width.

**Current IO HT Freq (2600MHz)**

This item shows the current IO HT Frequency.

**IO HT Frequency (Auto)**

This item allows you to set IO HT Frequency.

Press <Esc> to return to the M.I.B X Menu page.

**Auto Detect DIMM/PCI Clk (Enabled)**

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

**CPU/HT Reference Clock (MHz) (200)**

Use this item to set the CPU/HT Reference Clock through clock gen.

**CPU Unlock (Disabled)**

This item allows you to enable or disable CPU unlock function. It works depends on your CPU.

**CPU Voltage (Default)**

This item allows user to adjust CPU voltage when enabled.

**NB Voltage (Default)**

This item allows user to adjust NB voltage when enabled.

**VDIMM Voltage (Default)**

This item allows user to adjust DIMM voltage when enabled.

**SB Voltage (Default)**

This item allows user to adjust SB voltage when enabled.

**CPU Current Voltage (1.452V)**

This item shows the current CPU voltage.

**VDIMM Current Voltage (1.572V)**

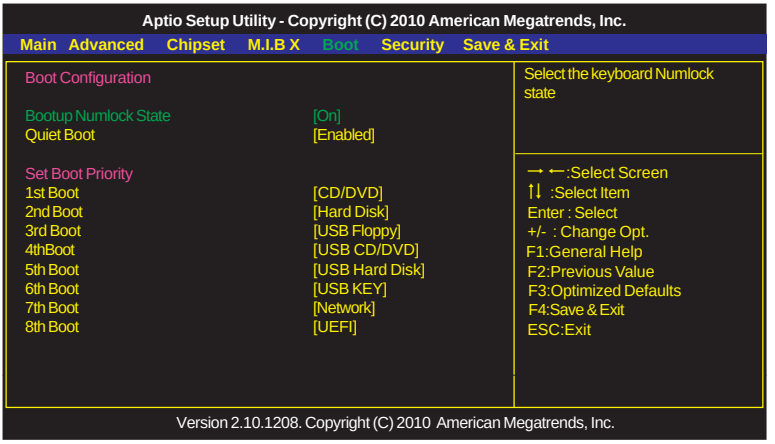
This item displays the current DIMM voltage.

**NB Current Voltage (N/A)**

This item shows the current NB voltage.

## *Boot Menu*

This page enables you to set the keyboard NumLock state and Boot device priority.




### Bootup NumLock State (On)

This item determines if the NumLock key is active or inactive at system start-up time.

### Quiet Boot (Enabled)

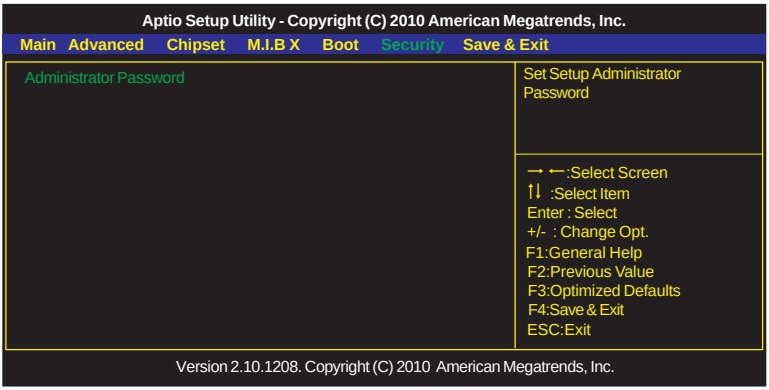
If enabled, BIOS will show a full screen logo at boot, if disabled, BIOS will set the initial display mode to BIOS and show the diagnostic POST screen at boot.

### 1st/2nd/3rd/4th/5th/6th/7th/8th Boot (CD/DVD /Hard Disk /USB Floppy /USB CD/DVD /USB Hard Disk /USB KEY /Network /UEFI)

Use these items to determine the device order the computer used to look for an operating system to load at start-up time. The devices showed here will be different depending on the exact devices installed on your motherboard.

## *Security Menu*

This page enables you to set setup administrator and password.

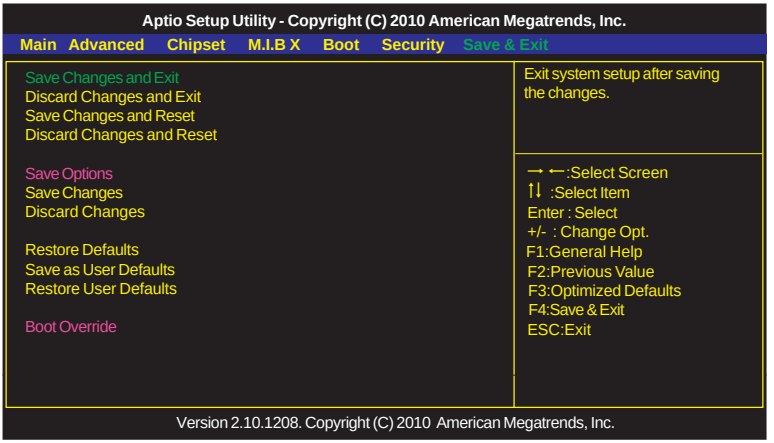

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
Administrator Password
Set Setup Administrator Password
→←:Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

### Administrator Password

This item allows you to set or change administrator password.

## *Save & Exit Menu*

This page enables you to exit system setup after saving or without saving the changes.




### Save Changes and Exit

This item enables you to save the changes that you have made and exit.

### Discard Changes and Exit

This item enables you to discard any changes that you have made and exit.

### Save Changes and Reset

This item enables you to save the changes that you have made and reset.

### Discard Changes and Reset

This item enables you to discard any changes that you have made and reset.

### Save Options

This item enables you to save the options that you have made.

### Save Changes

This item enables you to save the changes that you have made.

### Discard Changes

This item enables you to discard any changes that you have made.

### Restore Defaults

This item enables you to restore the system defaults.

### Save as User Defaults

This item enables you to save the changes that you have made as user defaults.

### Restore User Defaults

This item enables you to restore user defaults.

### Boot Override

Use this item to select the boot device.

## *Updating the BIOS*

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
2. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
3. Prepare a bootable device or create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
4. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the bootable device.
5. Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)
6. At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new BIOS and then press <Enter>. Example: AMINF340.EXE040706.ROM
7. When the installation is complete, remove the bootable device from the computer and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

***Memo***

# Chapter 4
## *Using the Motherboard Software*

## About the Software DVD-ROM/CD-ROM

The support software DVD-ROM/CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software. Before installing any software, always inspect the folder for files named README.TXT or something similar. These files may contain important information that is not included in this manual.

*1. Never try to install all software from folder that is not specified for use with your motherboard.*

*2. The notice of Intel HD Audio Installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center* ***"before"*** *installing HD audio driver bundled in the driver disk. Please log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105#appliesto for more information.*

## Auto-installing under Windows XP/Vista/7

The Auto-install DVD-ROM/CD-ROM makes it easy for you to install the drivers and software for your motherboard.

*If the Auto-install DVD-ROM/CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.*

The support software DVD-ROM/CD-ROM disc loads automatically under Windows XP/Vista/7. When you insert the DVD-ROM/CD-ROM disc in the DVD-ROM/CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has four buttons on it, Setup, Utilities, Browse CD and Exit.

* For reference only

*If the opening screen does not appear; double-click the file "setup.exe" in the root directory.*

### Drivers

| | |
|---|---|
| **Setup** | Click the **Setup** button to run the software installation program. Select from the menu which software you want to install. |
| **Utilities** | Click the **Utilities** button to display the application software and other software utilities that are available on the disk. Select the sofware you want to install then follow installation procedure. |
| **Browse CD** | The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support disk.<br><br>Before installing the software from Windows Explorer, look for a file named README.TXT or something similar. This file may contain important information to help you install the software correctly.<br><br>Some software is installed in separate folders for different operating systems.<br><br>In installing the software, execute a file named SETUP.EXE by double-clicking the file and then following the instructions on the screen. |
| **Exit** | The **EXIT** button closes the Auto Setup window. |

### Utilities

Lists the software utilities that are available on the disk.

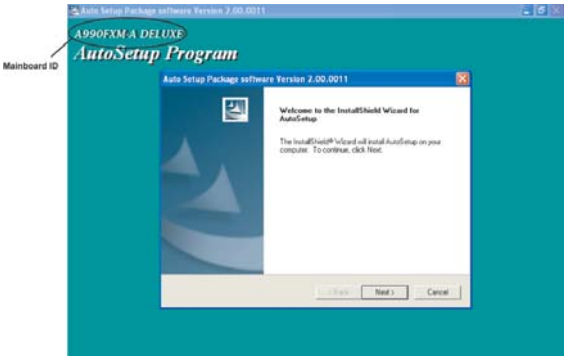
### Information

Displays the path for all software and drivers available on the disk.

## *Running Setup*

*Follow these instructions to install device drivers and software for the motherboard:*

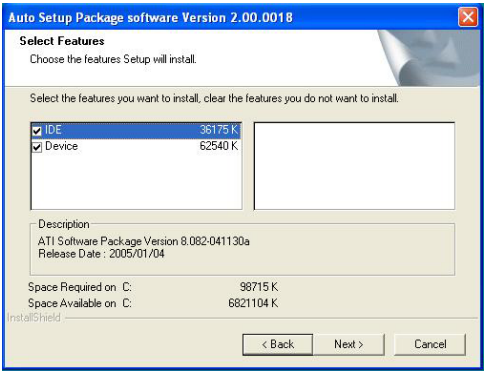
1. *Click **Setup**. The installation program begins:*




*The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.*

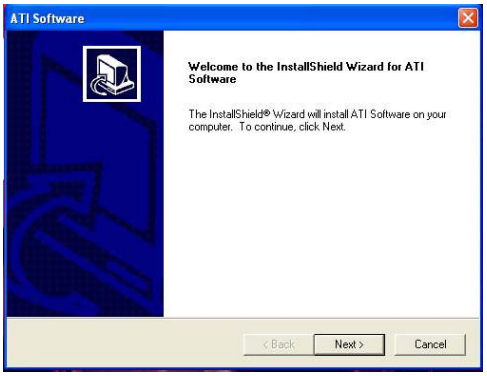
The motherboard identification is located in the upper left-hand corner.

**2.** *Click **Next.** The following screen appears:*


Auto Setup Package software Version 2.00.0018
Select Features
Choose the features Setup will install.
Select the features you want to install, clear the features you do not want to install.
IDE 36175 K
Device 62540 K
Description
ATI Software Package Version 8.082-041130a
Release Date : 2005/01/04
Space Required on C: 98715 K
Space Available on C: 6821104 K
InstallShield
< Back
Next >
Cancel

**3.** *Check the box next to the items you want to install. The default options are recommended.*

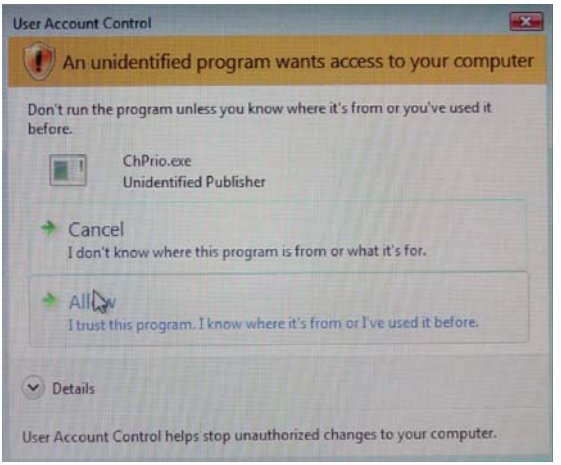
**4.** *Click **Next** run the Installation Wizard. An item installation screen appears:*


ATI Software
Welcome to the InstallShield Wizard for ATI Software
The InstallShield® Wizard will install ATI Software on your computer. To continue, click Next.
< Back
Next >
Cancel

**5.** *Follow the instructions on the screen to install the items.*

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

Windows Vista/7 will appear below UAC (User Account Control) message after the system restart. You must select "Allow" to install the next driver. Continue this process to complete the drivers installation.


User Account Control
An unidentified program wants access to your computer
Don't run the program unless you know where it's from or you've used it before.
ChPrio.exe
Unidentified Publisher
Cancel
I don't know where this program is from or what it's for.
Allow
I trust this program. I know where it's from or I've used it before.
Details
User Account Control helps stop unauthorized changes to your computer.

## Manual Installation

Insert the disk in the DVD-ROM/CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

## Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

*These software(s) are subject to change at anytime without prior notice. Please refer to the support disk for available software.*

# Chapter 5
# *Setting Up AMD SB950 RAID Configuration*

## Setting Up a bootable RAID Array

This section explains how to configure a bootable AMD RAID array.

### *Setting Up the BIOS*

1 Start your computer, then press Delete to enter the BIOS setup.

The BIOS CMOS Setup Utility screen appears.

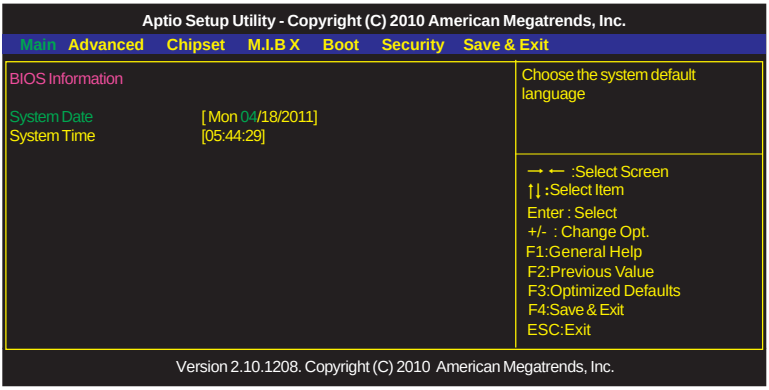

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
BIOS Information
System Date [ Mon 04/18/2011]
System Time [05:44:29]
Choose the system default language
→ ← :Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

Figure 1.1 BIOS CMOS Setup Utility Main Screen

2 Use the arrow keys to select Advanced menu (see Figure 1.1), then select SATA Configuration and press Enter.

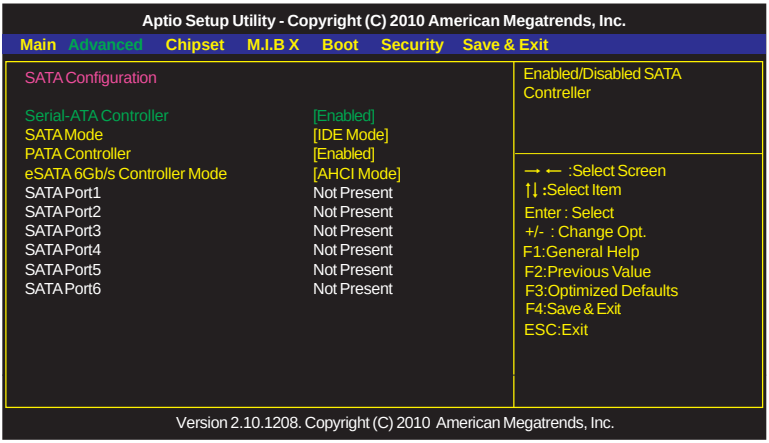

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.
Main Advanced Chipset M.I.B X Boot Security Save & Exit
SATA Configuration
Serial-ATA Controller [Enabled]
SATA Mode [IDE Mode]
PATA Controller [Enabled]
eSATA 6Gb/s Controller Mode [AHCI Mode]
SATA Port1 Not Present
SATA Port2 Not Present
SATA Port3 Not Present
SATA Port4 Not Present
SATA Port5 Not Present
SATA Port6 Not Present
Enabled/Disabled SATA Controller
→ ← :Select Screen
↑↓ :Select Item
Enter : Select
+/- : Change Opt.
F1:General Help
F2:Previous Value
F3:Optimized Defaults
F4:Save & Exit
ESC:Exit
Version 2.10.1208. Copyright (C) 2010 American Megatrends, Inc.

Figure 1.2 SATA Configuration Screen

3 Use the arrow keys to select the SATA Configuration (see Figure 1.2) and globally set SATA Configuration to RAID.

4 Press F4 to save the configuration and exit.
The PC reboots.

5 Enter the RAID BIOS Setup by pressing Ctrl-F when prompted, and proceed to set up the AMD RAID BIOS as described in the next section.

## *Configuring the AMD RAID BIOS (Windows XP Installation)*

The AMD RAID BIOS set up lets you choose the RAID type and which hard drives you want to make part of the array.

### Entering the RAID BIOS Setup:

1 Wait until you see the RAID software prompting you to press Ctrl-F.

The RAID prompt appears as part of the system POST and boot process prior to loading of the OS. You have a few seconds to press Ctrl-F before the screen disappears.

2 Press Ctrl-F.

The Main Menu screen appears (Figure 1.3).

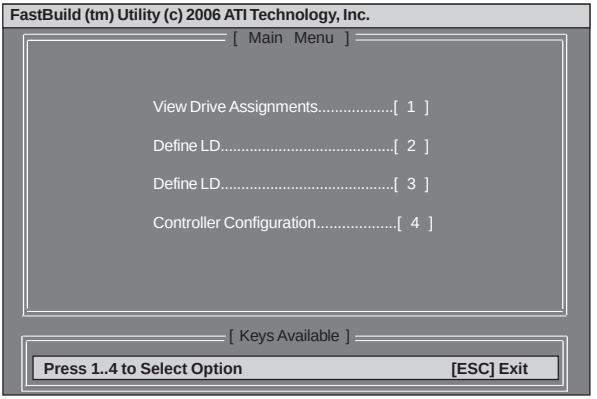

FastBuild (tm) Utility (c) 2006 ATI Technology, Inc.
[ Main Menu ]
View Drive Assignments.....[ 1 ]
Define LD.....[ 2 ]
Define LD.....[ 3 ]
Controller Configuration.....[ 4 ]
[ Keys Available ]
Press 1..4 to Select Option
[ESC] Exit

Figure 1.3 Main Menu

3 Select [2], then select LD 1 in the following page.

The Define LD Menu screen appears (Figure 1.4).

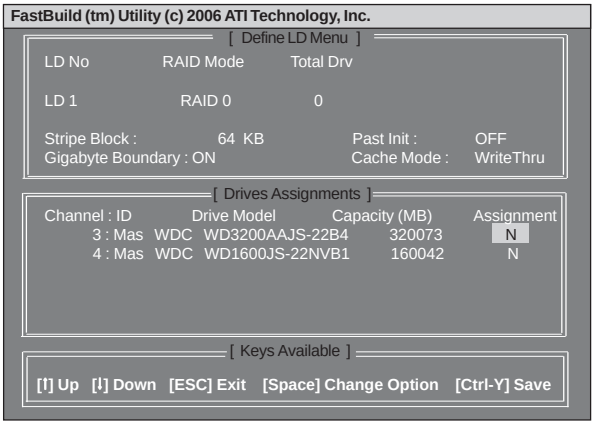

FastBuild (tm) Utility (c) 2006 ATI Technology, Inc.
[ Define LD Menu ]
LD No RAID Mode Total Drv
LD 1 RAID 0 0
Stripe Block : 64 KB
Gigabyte Boundary : ON
Past Init : OFF
Cache Mode : WriteThru
[ Drives Assignments ]
Channel : ID Drive Model Capacity (MB) Assignment
3 : Mas WDC WD3200AAJS-22B4 320073 N
4 : Mas WDC WD1600JS-22NVB1 160042 N
[ Keys Available ]
[↑] Up [↓] Down [ESC] Exit [Space] Change Option [Ctrl-Y] Save

Figure 1.4 Define LD Menu

## *Using the Define a New Array Screen*

If necessary, press the tab key to move from field to field until the appropriate field is highlighted.

*Note: If you want to use the function of the following RAID Mode, you have to install enough HDD.*

*RAID READY (1 piece of HDD); RAID 0,1 ,JBOD (2 or more pieces of HDD); RAID 0+1 (4 pieces of HDD)*

- **Selecting the RAID Mode**

  By default, this is set to Mirroring. To change to a different RAID mode, press the spacebar until the mode that you want appears in the RAID Mode box—RAID0/1/10/JBOD.

  Note: Not all RAID levels are supported on all platforms.

- **Selecting the Stripe Block Size**

  Stripe block size is given in kilobytes, and affects how data is arranged on the disk. It is recommended to leave this value at the default Optimal, which is 64KB, but the values can be 64 KB and 128 KB. When choose RAID 1, the Stripe block size is unchangeable.

## *Assigning the Disks*

1. Select the Assignment to Y to designate a free disk to be used as a RAID array disk.

Figure 1.5 illustrates the Define a New Array screen after two disks have been assigned as RAID 0 array disks.

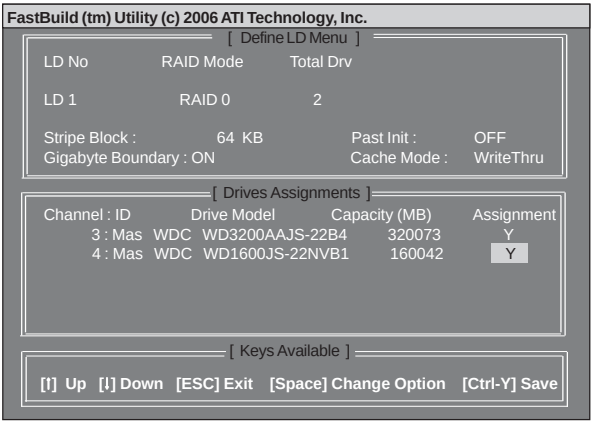

FastBuild (tm) Utility (c) 2006 ATI Technology, Inc.
[ Define LD Menu ]
LD No RAID Mode Total Drv
LD 1 RAID 0 2
Stripe Block : 64 KB
Past Init : OFF
Gigabyte Boundary : ON
Cache Mode : WriteThru
[ Drives Assignments ]
Channel : ID Drive Model Capacity (MB) Assignment
3 : Mas WDC WD3200AAJS-22B4 320073 Y
4 : Mas WDC WD1600JS-22NVB1 160042 Y
[ Keys Available ]
[↑] Up [↓] Down [ESC] Exit [Space] Change Option [Ctrl-Y] Save

Figure 1.5 FastBuild Utility—Array Disks Assigned

2. Press Ctrl-Y to save the configuration and exit.

The Define LD Menu screen appears (Figure 1.6).

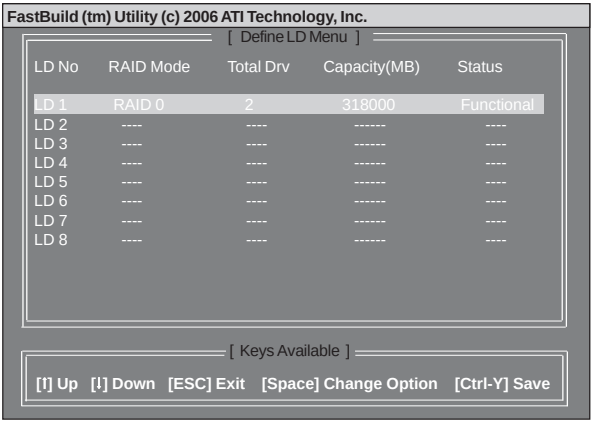

FastBuild (tm) Utility (c) 2006 ATI Technology, Inc.
[ Define LD Menu ]
LD No RAID Mode Total Drv Capacity(MB) Status
LD 1 RAID 0 2 318000 Functional
LD 2 ---- ---- ------ ----
LD 3 ---- ---- ------ ----
LD 4 ---- ---- ------ ----
LD 5 ---- ---- ------ ----
LD 6 ---- ---- ------ ----
LD 7 ---- ---- ------ ----
LD 8 ---- ---- ------ ----
[ Keys Available ]
[↑] Up [↓] Down [ESC] Exit [Space] Change Option [Ctrl-Y] Save

Figure 1.6 Define LD Menu

3. Press ESC to exit.

The Main Menu screen appears (Figure 1.7).

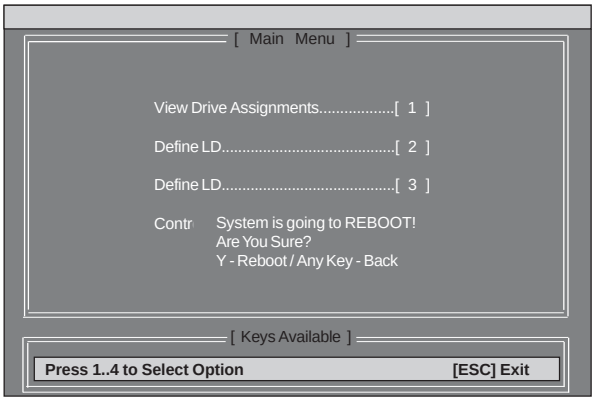

[ Main Menu ]
View Drive Assignments.....[ 1 ]
Define LD.....[ 2 ]
Define LD.....[ 3 ]
Contr
System is going to REBOOT!
Are You Sure?
Y - Reboot / Any Key - Back
[ Keys Available ]
Press 1..4 to Select Option
[ESC] Exit

Figure 1.7 Main Menu

4 Press Y to reboot.

The following screen appears (Figure 1.8).

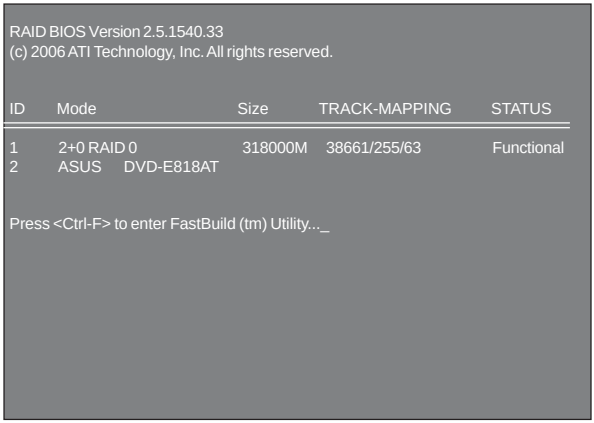

RAID BIOS Version 2.5.1540.33
(c) 2006 ATI Technology, Inc. All rights reserved.
ID Mode Size TRACK-MAPPING STATUS
1 2+0 RAID 0 318000M 38661/255/63 Functional
2 ASUS DVD-E818AT
Press <Ctrl-F> to enter FastBuild (tm) Utility..._

Figure 1.8

## *Installing the RAID Drivers*

Your system may come with a Windows install CD that already includes AMD RAID drivers. If so, then this section is not relevant.

If that is not the case (or you are trying to install a new version of Windows), then you will need an AMD RAID driver F6 install floppy. Check to see if one came with your system. If not, you can create one by downloading the appropriate driver package and following the steps in this section.

1 Copy all files in "...\RAID\ATI\SB950\Floppy\Win3264" to a floppy disk.

2 After you complete the RAID BIOS setup, boot from the Windows CD.

The Windows Setup program starts.

Figure 1.9

3 Press F6 and wait a few moments for the Windows Setup screen to appear.

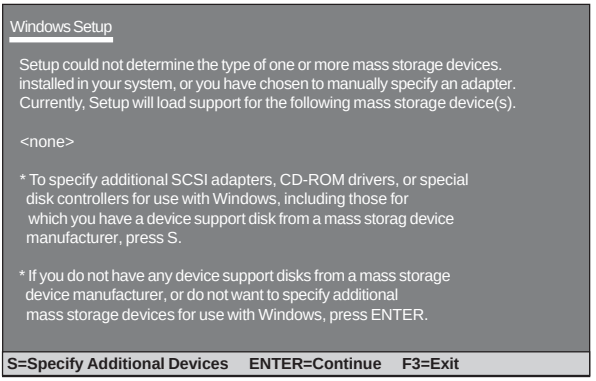

Windows Setup
Setup could not determine the type of one or more mass storage devices.
installed in your system, or you have chosen to manually specify an adapter.
Currently, Setup will load support for the following mass storage device(s).
<none>
* To specify additional SCSI adapters, CD-ROM drivers, or special
disk controllers for use with Windows, including those for
which you have a device support disk from a mass storag device
manufacturer, press S.
* If you do not have any device support disks from a mass storage
device manufacturer, or do not want to specify additional
mass storage devices for use with Windows, press ENTER.
S=Specify Additional Devices ENTER=Continue F3=Exit

Figure 1.10 Windows Setup—Specify Devices

4 Specify the AMD drivers.

a Insert the floppy that has the RAID driver, press S, then press Enter.

The following Windows Setup screen appears:

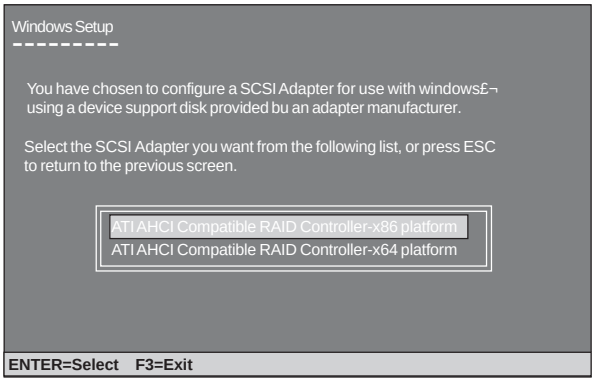

Windows Setup
You have chosen to configure a SCSI Adapter for use with windows£¬
using a device support disk provided bu an adapter manufacturer.
Select the SCSI Adapter you want from the following list, or press ESC
to return to the previous screen.
ATI AHCI Compatible RAID Controller-x86 platform
ATI AHCI Compatible RAID Controller-x64 platform
ENTER=Select F3=Exit

Figure 1.11 Windows Setup—Selected SCSI Adapter

b Select "ATI AHCI Compatible RAID Controller-x86 platform" and press Enter for 32-bit OS or Select "ATI AHCI Compatible RAID Controller-x64 platform" and press Enter for 64-bit OS.

The following Windows Setup screen appears listing both drivers:.

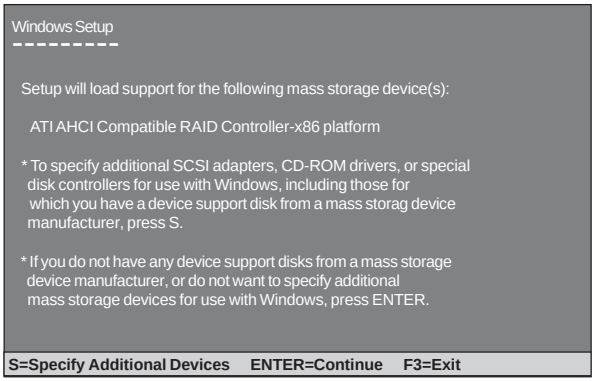

Windows Setup
Setup will load support for the following mass storage device(s):
ATI AHCI Compatible RAID Controller-x86 platform
* To specify additional SCSI adapters, CD-ROM drivers, or special
disk controllers for use with Windows, including those for
which you have a device support disk from a mass storag device
manufacturer, press S.
* If you do not have any device support disks from a mass storage
device manufacturer, or do not want to specify additional
mass storage devices for use with Windows, press ENTER.
S=Specify Additional Devices ENTER=Continue F3=Exit

Figure 1.12 Windows Setup—AMD drives listed

5 Press Enter to continue with Windows XP Installation.

Be sure to leave the floppy disk inserted in the floppy drive until the blue screen portion of Windows XP installation is completed, then take out the floppy.

6 Follow the instructions on how to install Windows XP.

After Windows XP is completely installed, it is recommended that you install the ForceWare software in order to access the FastBuild RAID Management tool.

**Note:** Each time you add a new hard drive to a RAID array, the RAID driver will have to be installed under Windows once for that hard drive. After that, the driver will not have to be installed.

## Memo

# Chapter 6
## *ATI CrossFireX™ Technology Support*

This motherboard supports the ATI CrossFireX™ Technology that allows you to install multi-graphics processing units (GPU) graphics cards. Follow the installation procedures in this section.

## Requirements

1 Two or three identical CrossFireX™ ready graphic cards are needed for the setup of 2-way / 3-way CrossFireX™ configuration.
2 You would need one or two CrossfireX™ bridge cable.
3 Make sure that your graphics card driver supports the ATI CrossFireX™ technology. Download the latest driver from the ATI website (www.ati.com).
4 Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.

## Installing CrossFireX™ graphics cards

1. Insert the CrossFireX™ graphics cards into the **PCIEX16** slots. Make sure that the card is properly seated on the slot.

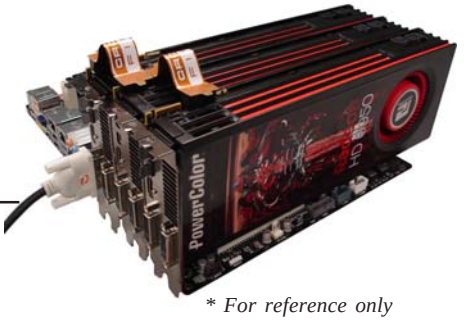
*A. For 2-way configuration, install two graphic cards on PCIEX16_1 & PCIEX16_2 and connect them with the CrossFire™ Bridge.*

** For reference only*

*B. For 3-way configuration, two CrossFire™ Bridges are needed to connect the three graphic cards.*

3. Connect the cable from your monitors to the CrossFireX™ ready graphics card installed on the **PCIEX16_1** slot.

** For reference only*



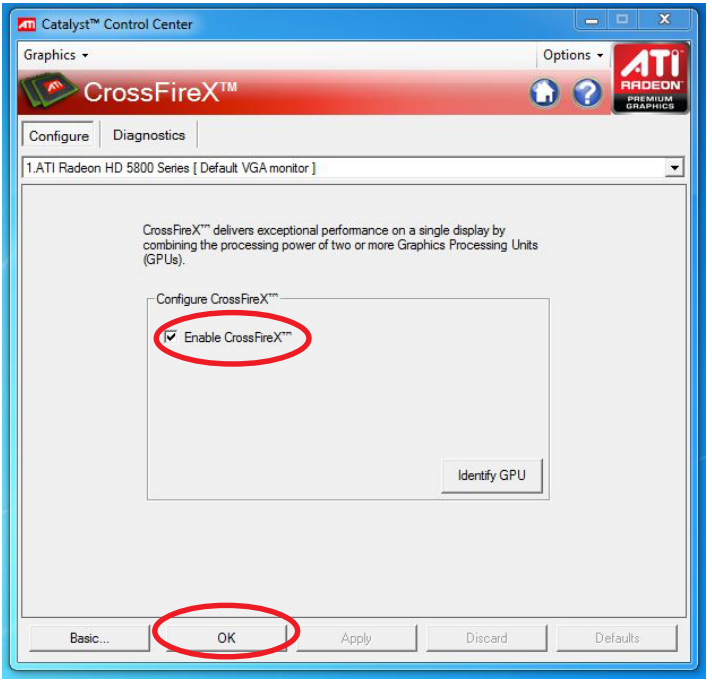

** For reference only*

4. Connect an auxiliary power source from the power supply to the graphics cards.

# The Catalyst™ Control Center Dialog Box

***To enable CrossFireX™:***

- Install ATI graphic card driver.
- Enter the Catalyst™ Control Center Dialog Box.
- check the "Enable CrossFireX™" item.
- Click OK to apply.



## Memo

# Chapter 7
# *Trouble Shooting*

## Start up problems during assembly

After assembling the PC for the first time you may experience some start up problems. Before calling for technical support or returning for warranty, this chapter may help to address some of the common questions using some basic troubleshooting tips.

### *a) System does not power up and the fans are not running.*

1.Disassemble the PC to remove the VGA adaptor card, DDR memory, LAN, USB and other peripherals including keyboard and mouse. Leave only the motherboard, CPU with CPU cooler and power supply connected. Turn on again to see if the CPU and power supply fans are running.

2. Make sure to remove any unused screws or other metal objects such as screwdrivers from the inside PC case. This is to prevent damage from short circuit.

3. Check the CPU FAN connector is connected to the motherboard.

4. For Intel platforms check the pins on the CPU socket for damage or bent. A bent pin may cause failure to boot and sometimes permanent damage from short circuit.

5. Check the 12V power connector is connected to the motherboard.

6. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

### *b) Power is on, fans are running but there is no display*

1. Make sure the monitor is turned on and the monitor cable is properly connected to the PC.

2. Check the VGA adapter card (if applicable) is inserted properly.

3. Listen for beep sounds. If you are using internal PC speaker make sure it is connected.
   a. continuous 3 short beeps : memory not detected
   b. 1 long beep and 8 short beeps : VGA not detected

### *c) The PC suddenly shuts down while booting up.*

1. The CPU may experience overheating so it will shutdown to protect itself. Ensure the CPU fan is working properly.

2. From the BIOS setting, try to disable the Smartfan function to let the fan run at default speed. Doing a Load Optimised Default will also disable the Smartfan.

## Start up problems after prolong use

After a prolong period of use your PC may experience start up problems again. This may be caused by breakdown of devices connected to the motherboard such as HDD, CPU fan, etc. The following tips may help to revive the PC or identify the cause of failure.

1. Clear the CMOS values using the CLR_CMOS jumper. Refer to CLR_CMOS jumper in Chapter 2 for Checking Jumper Settings in this user manual. When completed, follow up with a Load Optimised Default in the BIOS setup.

2. Check the CPU cooler fan for dust. Long term accumulation of dust will reduce its effectiveness to cool the processor. Clean the cooler or replace a new one if necessary.

3. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

4. Remove the hard drive, optical drive or DDR memory to determine which of these components may be at fault.

## Maintenance and care tips

Your computer, like any electrical appliance, requires proper care and maintenance. Here are some basic PC care tips to help prolong the life of the motherboard and keep it running as best as it can.

1. Keep your computer in a well ventilated area. Leave some space between the PC and the wall for sufficient airflow.

2. Keep your computer in a cool dry place. Avoid dusty areas, direct sunlight and areas of high moisture content.

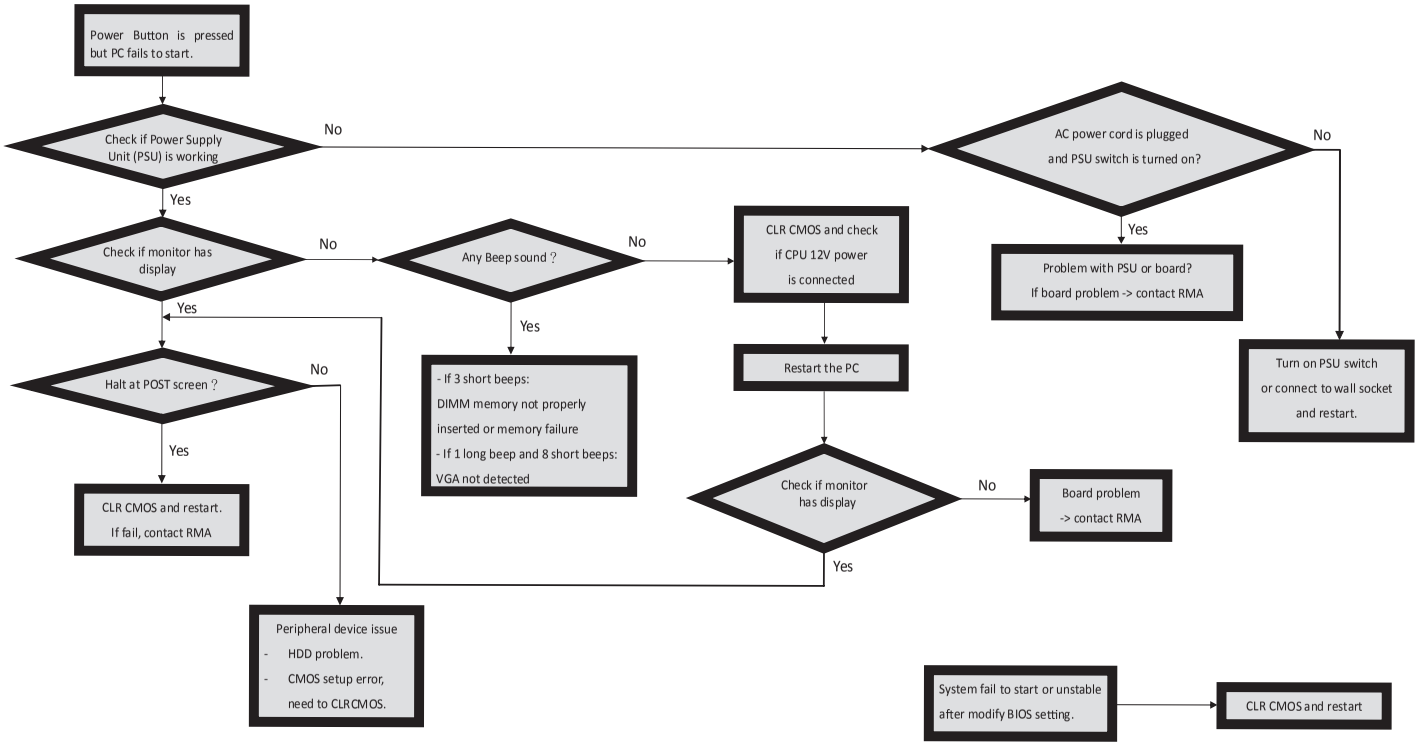
3. Routinely clean the CPU cooler fan to remove dust and hair.

4. In places of hot and humid weather you should turn on your computer once every other week to circulate the air and prevent damage from humidity.

5. Add more memory to your computer if possible. This not only speeds up the system but also reduces the loading of your hard drive to prolong its life span.

6. If possible, ensure the power cord has an earth ground pin directly from the wall outlet. This will reduce voltage fluctuation that may damage sensitive devices.

# Basic Troubleshooting Flowchart


Power Button is pressed but PC fails to start.
Check if Power Supply Unit (PSU) is working
No
Yes
AC power cord is plugged and PSU switch is turned on?
No
Yes
Problem with PSU or board? If board problem -> contact RMA
Turn on PSU switch or connect to wall socket and restart.
Check if monitor has display
No
Yes
Any Beep sound ?
No
Yes
CLR CMOS and check if CPU 12V power is connected
Restart the PC
Check if monitor has display
No
Board problem -> contact RMA
Yes
- If 3 short beeps: DIMM memory not properly inserted or memory failure
- If 1 long beep and 8 short beeps: VGA not detected
Halt at POST screen ?
No
Yes
CLR CMOS and restart. If fail, contact RMA
Peripheral device issue
- HDD problem.
- CMOS setup error, need to CLRCMOS.
System fail to start or unstable after modify BIOS setting.
CLR CMOS and restart

## Memo

## POST Code Checkpoints

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS :

| Checkpoint | Description |
|---|---|
| 01-0F | SEC Status Codes & Errors |
| 10-2F | PEI execution up to and including memory detection |
| 30-4F | PEI execution after memory detection |
| 50-5F | PEI errors |
| 60-CF | DXE execution up to BDS |
| D0-DF | DXE errors |
| E0-E8 | S3 Resume (PEI) |
| E9-EF | S3 Resume errors (PEI) |
| F0-F8 | Recovery (PEI) |
| F9-FF | Recovery errors (PEI) |
| 0 | Not used |
| 1 | Power on. Reset type detection (soft/hard). |
| 2 | AP initialization before microcode loading |
| 3 | North Bridge initialization before microcode loading |
| 4 | South Bridge initialization before microcode loading |
| 5 | OEM initialization before microcode loading |
| 6 | Microcode loading |
| 7 | AP initialization after microcode loading |
| 8 | North Bridge initialization after microcode loading |
| 9 | South Bridge initialization after microcode loading |
| A | OEM initialization after microcode loading |
| B | Cache initialization |
| C-D | Reserved for future AMI SEC error codes |
| E | Microcode not found |
| F | Microcode not loaded |
| 10 | PEI Core is started |
| 11 | Pre-memory CPU initialization is started |
| 12 | Pre-memory CPU initialization (CPU module specific) |
| 13 | Pre-memory CPU initialization (CPU module specific) |
| 14 | Pre-memory CPU initialization (CPU module specific) |
| 15 | Pre-memory North Bridge initialization is started |
| 16 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 17 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 18 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 19 | Pre-memory South Bridge initialization is started |
| 1A | Pre-memory South Bridge initialization (South Bridge module specific) |
| 1B | Pre-memory South Bridge initialization (South Bridge module specific) |
| 1C | Pre-memory South Bridge initialization (South Bridge module specific) |
| 1D-2A | OEM pre-memory initialization codes |
| 2B | Memory initialization. Serial Presence Detect (SPD) data reading |
| 2C | Memory initialization. Memory presence detection |
| 2D | Memory initialization. Programming memory timing information |
| 2E | Memory initialization. Configuring memory |
| 2F | Memory initialization (other). |
| 30 | Reserved for ASL (see ASL Status Codes section below) |
| 31 | Memory Installed |
| 32 | CPU post-memory initialization is started |
| 33 | CPU post-memory initialization. Cache initialization |
| 34 | CPU post-memory initialization. Application Processor(s) (AP) initialization |

| | |
|---|---|
| 35 | CPU post-memory initialization. Boot Strap Processor (BSP) selection |
| 36 | CPU post-memory initialization. System Management Mode (SMM) initialization |
| 37 | Post-Memory North Bridge initialization is started |
| 38 | Post-Memory North Bridge initialization (North Bridge module specific) |
| 39 | Post-Memory North Bridge initialization (North Bridge module specific) |
| 3A | Post-Memory North Bridge initialization (North Bridge module specific) |
| 3B | Post-Memory South Bridge initialization is started |
| 3C | Post-Memory South Bridge initialization (South Bridge module specific) |
| 3D | Post-Memory South Bridge initialization (South Bridge module specific) |
| 3E | Post-Memory South Bridge initialization (South Bridge module specific) |
| 3F-4E | OEM post memory initialization codes |
| 4F | DXE IPL is started |
| 50 | Memory initialization error. Invalid memory type or incompatible memory speed |
| 51 | Memory initialization error. SPD reading has failed |
| 52 | Memory initialization error. Invalid memory size or memory modules do not match. |
| 53 | Memory initialization error. No usable memory detected |
| 54 | Unspecified memory initialization error. |
| 55 | Memory not installed |
| 56 | Invalid CPU type or Speed |
| 57 | CPU mismatch |
| 58 | CPU self test failed or possible CPU cache error |
| 59 | CPU micro-code is not found or micro-code update is failed |
| 5A | Internal CPU error |
| 5B | reset PPI is not available |
| 5C-5F | Reserved for future AMI error codes |
| E0 | S3 Resume is stared (S3 Resume PPI is called by the DXE IPL) |
| E1 | S3 Boot Script execution |
| E2 | Video repost |
| E3 | OS S3 wake vector call |
| E4-E7 | Reserved for future AMI progress codes |
| E0 | S3 Resume is stared (S3 Resume PPI is called by the DXE IPL) |
| E8 | S3 Resume Failed in PEI |
| E9 | S3 Resume PPI not Found |
| EA | S3 Resume Boot Script Error |
| EB | S3 OS Wake Error |
| EC-EF | Reserved for future AMI error codes |
| F0 | Recovery condition triggered by firmware (Auto recovery) |
| F1 | Recovery condition triggered by user (Forced recovery) |
| F2 | Recovery process started |
| F3 | Recovery firmware image is found |
| F4 | Recovery firmware image is loaded |
| F5-F7 | Reserved for future AMI progress codes |
| F0 | Recovery condition triggered by firmware (Auto recovery) |
| F1 | Recovery condition triggered by user (Forced recovery) |
| F2 | Recovery process started |
| F3 | Recovery firmware image is found |
| F4 | Recovery firmware image is loaded |
| F5-F7 | Reserved for future AMI progress codes |
| F8 | Recovery PPI is not available |
| F9 | Recovery capsule is not found |
| FA | Invalid recovery capsule |

| | |
|---|---|
| FB-FF | Reserved for future AMI error codes |
| 1 | Memory not Installed |
| 1 | Memory was installed twice (InstallPeiMemory routine in PEI Core called twice) |
| 2 | Recovery started |
| 3 | DXEIPL was not found |
| 3 | DXE Core Firmware Volume was not found |
| 7 | Reset PPI is not available |
| 4 | Recovery failed |
| 4 | S3 Resume failed |
| 60 | DXE Core is started |
| 61 | NVRAM initialization |
| 62 | Installation of the South Bridge Runtime Services |
| 63 | CPU DXE initialization is started |
| 64 | CPU DXE initialization (CPU module specific) |
| 65 | CPU DXE initialization (CPU module specific) |
| 66 | CPU DXE initialization (CPU module specific) |
| 67 | CPU DXE initialization (CPU module specific) |
| 68 | PCI host bridge initialization |
| 69 | North Bridge DXE initialization is started |
| 6A | North Bridge DXE SMM initialization is started |
| 6B | North Bridge DXE initialization (North Bridge module specific) |
| 6C | North Bridge DXE initialization (North Bridge module specific) |
| 6D | North Bridge DXE initialization (North Bridge module specific) |
| 6E | North Bridge DXE initialization (North Bridge module specific) |
| 6F | North Bridge DXE initialization (North Bridge module specific) |
| 70 | South Bridge DXE initialization is started |
| 71 | South Bridge DXE SMM initialization is started |
| 72 | South Bridge devices initialization |
| 73 | South Bridge DXE Initialization (South Bridge module specific) |
| 74 | South Bridge DXE Initialization (South Bridge module specific) |
| 75 | South Bridge DXE Initialization (South Bridge module specific) |
| 76 | South Bridge DXE Initialization (South Bridge module specific) |
| 77 | South Bridge DXE Initialization (South Bridge module specific) |
| 78 | ACPI module initialization |
| 79 | CSM initialization |
| 7A-7F | Reserved for future AMI DXE codes |
| 80-8F | OEM DXE initialization codes |
| 90 | Boot Device Selection (BDS) phase is started |
| 91 | Driver connecting is started |
| 92 | PCI Bus initialization is started |
| 93 | PCI Bus Hot Plug Controller Initialization |
| 94 | PCI Bus Enumeration |
| 95 | PCI Bus Request Resources |
| 96 | PCI Bus Assign Resources |
| 97 | Console Output devices connect |
| 98 | Console input devices connect |
| 99 | Super IO Initialization |
| 9A | USB initialization is started |
| 9B | USB Reset |
| 9C | USB Detect |
| 9D | USB Enable |

| | |
|---|---|
| 9E-9F | Reserved for future AMI codes |
| A0 | IDE initialization is started |
| A1 | IDE Reset |
| A2 | IDE Detect |
| A3 | IDE Enable |
| A4 | SCSI initialization is started |
| A5 | SCSI Reset |
| A6 | SCSI Detect |
| A7 | SCSI Enable |
| A8 | Setup Verifying Password |
| A9 | Start of Setup |
| AA | Reserved for ASL (see ASL Status Codes section below) |
| AB | Setup Input Wait |
| AC | Reserved for ASL (see ASL Status Codes section below) |
| AD | Ready To Boot event |
| AE | Legacy Boot event |
| AF | Exit Boot Services event |
| B0 | Runtime Set Virtual Address MAP Begin |
| B1 | Runtime Set Virtual Address MAP End |
| B2 | Legacy Option ROM Initialization |
| B3 | System Reset |
| B4 | USB hot plug |
| B5 | PCI bus hot plug |
| B6 | Clean-up of NVRAM |
| B7 | Configuration Reset (reset of NVRAM settings) |
| B8-BF | Reserved for future AMI codes |
| C0-CF | OEM BDS initialization codes |
| D0 | CPU initialization error |
| D1 | North Bridge initialization error |
| D2 | South Bridge initialization error |
| D3 | Some of the Architectural Protocols are not available |
| D4 | PCI resource allocation error. Out of Resources |
| D5 | No Space for Legacy Option ROM |
| D6 | No Console Output Devices are found |
| D7 | No Console Input Devices are found |
| D8 | Invalid password |
| D9 | Error loading Boot Option (LoadImage returned error) |
| DA | Boot Option is failed (StartImage returned error) |
| DB | Flash update is failed |
| DC | Reset protocol is not available |
| 4 | Some of the Architectural Protocols are not available |
| 5 | No Console Output Devices are found |
| 5 | No Console Input Devices are found |
| 1 | Invalid password |
| 6 | Flash update is failed |
| 7 | Reset protocol is not available |
| 8 | Platform PCI resource requirements cannot be met |
| 01 | System is entering S1 sleep state |
| 02 | System is entering S2 sleep state |
| 03 | System is entering S3 sleep state |
| 04 | System is entering S4 sleep state |